

# Indiana Multimodal Freight and Mobility Plan

## final report

*prepared for*

**Indiana Department of Transportation**

*prepared by*

**Cambridge Systematics, Inc.**



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# 1.0 Introduction

The demand for freight services is at an all-time high due to shifts in the economy and rapid growth in international trade. This is resulting in a freight transportation crisis impacting all modes. The railroads are operating near capacity and have begun shedding less profitable traffic. Consequently, trucks are picking up most of the unmet demand for freight rail, creating greater burdens on the highway networks that are already congested from passenger automobile traffic. Due to a number of factors, including its strategic location in close proximity to large consumer markets and an excellent multimodal transportation network, Indiana is feeling more than its share of the increased burden of increasing freight mobility demands. What is clear is that no single mode of transportation will sufficiently serve the growing demand for the movement of goods and passengers in Indiana. What is needed is a coordinated multimodal freight network.

The Indiana Multimodal Freight and Mobility Plan (Plan) is being developed to direct the State of Indiana's future freight policy, provide a framework to guide future decisions regarding freight transportation investments, and ensure the efficient use of resources to support systemwide objectives. In addition to looking at the current and future freight flows and the needs of current users of the system, the Plan will also identify economic development opportunities related to the enhancement of Indiana's freight infrastructure. The Plan will support INDOT's Long-Range Transportation Plan, and in so doing will address how freight mobility impacts the entire transportation system of Indiana.

The development of the Plan began with establishing a profile of existing conditions, which included coordination and outreach to numerous project stakeholders, including shippers, carriers, and government agencies, to gain an understanding of their needs and issues, as related to freight mobility. This was followed by the data collection and inventory phase during which available relevant information on freight mobility was obtained, including goods movement data (the demand for freight services); transportation incident data (safety and security); economic, land use and demographic data (freight drivers); and existing and proposed network data (supporting freight infrastructure). Future growth rates were then applied to these existing conditions in order to forecast freight movements through the year 2035. From this existing and future data, freight system performance was profiled, identifying and evaluating key performance measures for major freight corridors in the state.

A major component of the Plan is the establishment of an economic and industry profile which assesses the State of Indiana's economy as it relates to trends in goods movement and logistics, discussing the factors that drive the demand for freight in Indiana. In addition, the Plan identifies and discusses the policies and issues that impact freight mobility in the State, focusing on potential institutional

barriers that may hinder the integration of freight issues into the transportation planning and programming process. Based on the information collected and assessments performed, the Plan then identifies the State's freight transportation system gaps and needs, potential funding sources, a methodology for evaluating and prioritizing freight projects, and a phased implementation plan for policy, capital and operational freight improvements.

## **2.0 Coordination and Outreach**

### **2.1 PURPOSE AND GOALS OF OUTREACH PROGRAM**

The Coordination and Outreach component of the Indiana Multimodal Freight and Mobility Plan (Plan) is an essential means of including the stakeholders, from both public agencies and the private sector, in the process. Not only is this a means of keeping the stakeholders apprised of the study's findings and recommendations, but it is also a valuable tool for engaging them in the study, obtaining valuable input and gaining a better understanding of their needs and issues. In addition, by including the stakeholders in the study process, they are much more likely to take ownership in and support the study's final recommendations.

The Coordination and Outreach program for the Plan is based on a three-step approach which includes Stakeholder Interviews, Agency Outreach, and the Establishment of a Freight Advisory Committee. The goal of the Coordination and Outreach program was to build on existing organizations, including economic development groups at the state and regional level, and other agencies across the State. In addition, the State's Metropolitan Planning Organizations (MPOs) were tapped for their input into regional issues, as well as the freight carriers and shippers, who were targeted through the Stakeholder Interview process.

The initial outreach efforts began early in the study process with project kickoff meetings with two key stakeholder groups, followed by a series of interviews with shippers, carriers, and agency representatives. The kickoff meetings involved presentations at the Statewide MPO Conference and the Indiana Logistics Council Infrastructure Subcommittee Meeting. The interview process involved the identification of freight industry and agency representatives and the development of a survey guide, followed by implementation of the actual interviews. These activities are described in more detail below.

### **2.2 MPO CONFERENCE AND LOGISTICS COUNCIL PRESENTATIONS**

Shortly after the Plan's development began, a presentation was given by the study team at the Indiana Statewide Metropolitan Planning Organization (MPO) Conference, held in Evansville, Indiana on October 10, 2007. This provided an opportunity to create awareness of the study among the State's 14 MPOs and other agencies represented at the conference. The presentation included a discussion of the goals of the study, freight trends at both the national and state levels, the study's scope, and a timeline for completion of the various components of the study. In addition, attendees were advised of the role of the MPOs in upcoming agency interviews, and were encouraged to participate in the

interview process. The session was well-attended and the PowerPoint presentation was made available for inclusion on the Conference web site. The Plan was presented again at the annual Indiana Statewide MPO Conference in South Bend on October 7, 2008.

During the project's scoping phase, it was determined that a Freight Advisory Committee would be established and supported by INDOT to oversee the study. This committee would consist of private and public sector stakeholders, including shippers, carriers, agencies, and organizations with a vested interest in moving freight efficiently to, from, and within the State of Indiana. The Indiana Logistics Council, which represents 41 organizations from the public and private sectors, was identified as the appropriate body to serve in this advisory capacity. The Council has created three subcommittees, including Industry Awareness, Workforce Development, and Infrastructure (the Infrastructure Subcommittee has specifically identified the utilization of the Indiana Multimodal Freight and Mobility Plan as one of its actions in the current year). An initial presentation on the Plan was provided to the Infrastructure Subcommittee at its quarterly meeting on October 25, 2007. This presentation followed the format of the one that was provided to the MPO Conference, which is described above.

## 2.3 STAKEHOLDERS INTERVIEWS

During the initial stages of the Plan's development, a stakeholder survey was conducted by the CS project team. The purpose of the survey was to provide a qualitative understanding of freight issues and trends that would complement the quantitative data collected from other sources. In addition to providing an avenue for participants to express advice and thoughts in regard to freight transportation system strengths and weaknesses, the interviews also afforded valuable insight and multiple perspectives to be taken into consideration when drafting the Plan.

A preliminary list of stakeholders was assembled through conversations with INDOT staff, revisiting prior related studies, and referencing both the Logistics Council and Indiana Logistics Directory contact lists. This list was reviewed and adjusted in an attempt to recruit a diverse mix of public and private sector participants representing a range of backgrounds. Further recommendations were gleaned through conversations during initial interviews. In all, 47 organizations were contacted, resulting in a total of 26 interviews being conducted between December 2007 and February 2008. Most interviews were conducted either in-person or by phone, with one being returned via e-mail. A listing of the agencies represented in the interviews, along with their respective sectors, is shown in Table 2.1.

**Table 2.1 Stakeholder Interviewees**

<b>Agency</b>	<b>Sector</b>
Delaware-Muncie MPC (DMMPC)	MPO
Indianapolis MPO	MPO
Bloomington Area/Monroe County MPO (BMCMPPO)	MPO
Northwest Indiana RPC (NIRPC)	MPO
Evansville MPO	MPO
Ohio-Kentucky-Indiana Regional Council of Governments (OKI)	MPO
Michiana Area Council of Governments (MACOG)	MPO
Kentuckiana Regional Planning and Development Agency (KIPDA)	MPO
Columbus Area MPO (CAMPO)	MPO
Northeastern Indiana RCC (NIRCC)	MPO
Madison County Council of Governments (MCCOG)	MPO
Purdue University (Automotive Clustering Study)	University
Purdue University Westville (Coal Transportation)	University
Purdue University (Biofuels)	University
University Loft Company	Shipper
Thomson Consumer Electronics	Shipper
Indiana Grain and Feed Association	Shipper
U.S. Food Service	Shipper
Vanguard Services, Inc.	Transportation
Indiana Motor Truck Association	Transportation
Ports of Indiana	Transportation
Indianapolis International Airport	Transportation
Baylor Trucking/Baylor Intermodal	Transportation
Duke Realty	Developer
Indiana Economic Development Corporation (IEDC)	Economic Development
Northwest Indiana Forum	Economic Development

## 2.4 SUMMARY OF INTERVIEW RESULTS

Indiana is often referred to as the “Crossroads of America,” and input from the stakeholder group largely supported this claim. Throughout the interview process, several key themes resonated regarding pressures and demand on the state-wide multimodal transportation infrastructure as a result of trends both within the State and nationwide.

This section begins with a comprehensive summary of discussions with the participating MPOs. What follows are highlights of key pieces of knowledge gathered from the various other interviewees, beginning with a summary of general freight comments, then followed by more specific comments broken out by mode.

### MPO Interview Summary

A significant group of stakeholders interviewed through the study’s Outreach Program included representatives of 11 of Indiana’s 14 MPOs. It was apparent during most of the interviews that while freight is an emerging area of interest, freight planning had not historically been a component of their long-range plans in the past. While six of the 11 MPOs interviewed do have freight components in their current LRTPs, most of these involve discussions of freight issues, with only a few actually identifying freight-related projects. Accordingly, three of the MPOs do employ specific evaluation criteria or performance measures to prioritize freight projects for inclusion in their LRTP and TIP. At the present time, none of the MPOs have dedicated, full-time “freight” personnel, however, many of them have identified certain staff who allocate a portion of their time to addressing freight-related issues. Of the 11 MPOs interviewed, three have a designated Freight Working Group or Steering Committee, with one additional MPO’s Intermodal Advisory Task Force recently becoming inactive.

Most of the MPOs are beginning to realize the need for Freight Planning and the linkages between freight mobility and economic development. It appears that this realization will result in more emphasis in the future on freight planning at the regional level. For example, the MPO Council, the Statewide Peer Group of Indiana’s MPOs, is in the process of developing a Freight Subcommittee, which will likely begin meeting in 2009. Many of the MPOs that were interviewed expressed interest in participating in this subcommittee.

Over half of the MPOs interviewed had recently completed, or have underway, freight-specific studies, plans or projects as summarized in the bullet points below:

- The most active of the MPOs in the freight-planning arena, the Michiana Area Council of Governments (MACOG), conducted a Freight Inventory and Study in 2004 which identified needs for infrastructure improvements to improve freight mobility within the region. The identified projects were subsequently designated in the LRTP’s project listings. More recently, in 2007,



MACOG completed a Truck Route Inventory Report for Elkhart, Kosciusko, Marshall, and St. Joseph Counties. In addition, MACOG's Comprehensive Economic Development Strategy (CEDS), updated in 2006, provides a regional view of freight-producing industries in the region.

- The Indianapolis MPO's Freight Plan was completed in 1998.
- MCCOG's Intermodal Study was completed in 2000. In addition, a railroad grade separation study is currently underway.
- OKI has included a Freight Study in their UPWP for 2008.
- The Evansville MPO performed a survey in 2005 to identify freight concerns in each of its five counties. In addition, the Southwest Indiana Intermodal Terminal Feasibility Study was completed in 2006.
- KIPDA has included a study in their UPWP to consider freight flows within their travel demand model. In addition, KIPDA is currently developing a survey to identify potential freight bottlenecks within the region.
- In Northwest Indiana, the Four Cities Consortium grew out of the Conrail acquisition (by NS and CSX) to address the issue of at-grade crossings. (The Consortium included the cities of Whiting, Hammond, East Chicago, and Gary.) The Consortium received CMAQ funding through NIRPC, however it is yet to be implemented. The Four Cities Consortium was linked to the CREATE program in Illinois.
- Since the interviews were completed, an EIS was completed underway by the Surface Transportation Board (STB) to evaluate the impacts of the CN's proposed acquisition of the Elgin, Joliet, & Eastern Railway Company (EJ&E) Regional Railroad in Northwestern Indiana and Northeastern Illinois. Following completion of the EIS, the STB did approve this acquisition.

### **Summary of General Stakeholder Input**

Based on stakeholder conversations and outside research, there are many factors that suggest that Indiana is primed for growth in industries that have been established strongholds in the State, particularly manufacturing. The optimal site locations for industrial growth are hinged upon having access to an efficient transportation system as well as to a capable labor pool. For this reason, it appears that Indianapolis and other population bases with multimodal access are ideal candidates to embrace business growth. The following stakeholder points support this claim:

- Overall the State has an effective base of transportation infrastructure from which to build across all modes.
- A vast majority of freight traffic through the State is pass-through traffic, en route to or from destinations outside of Indiana. It is in the best interest of most Indiana businesses to begin to capture a portion of this traffic.

- Connectivity to a large consumer population base in Indiana and neighboring states is one of the primary attributes of business siting in Indiana.
- The Indianapolis area is in a favorable position for aggressive economic development for the following reasons:
  - Ample room for air cargo expansion on the entire north side of Indianapolis International Airport;
  - Excellent highway connectivity in all directions with the exception of the Southwest, where the I-69 linkage between Indianapolis and Evansville is currently under development;
  - Class I rail connectivity to East coast and West coast seaports; and
  - Relatively low-priced land available for industrial/logistics-oriented uses.
- Availability of qualified, skilled workers for general labor, manufacturing, and warehouse jobs is an emerging concern.
- Key industry growth is occurring in numerous sectors: automotive and transportation equipment (Honda, Toyota, and Subaru); telecommunications, logistics and distribution; and life sciences.
- Traditional agricultural trends related to the production of grain are being complemented by emerging ethanol and biofuel industry growth.

### **Highway-Related Stakeholder Input**

Similar to other states in the U.S., the Indiana highway system is the predominant mode of freight transport in the State, and it comes as no surprise that many of the issues facing the trucking industry in Indiana reflect national trends. Examples of these broad concerns include: availability and retention of qualified and reliable drivers; shift from owner-operators to larger companies due to increased expenses; continuing pressure to keep prices competitive despite rising fuel costs; and increased pressure from shippers to increase weight and cube capacity of vehicles. Topics that arose which are specific to the State of Indiana are summarized in the bullets that follow:

- There is substantial demand for truck parking facilities along major interstate routes. Existing facilities are full on a consistent basis which is a cause for concern as related to hours-of-service regulations. It was noted that public truck parking facilities do exist along the Indiana Toll Road, in locations formerly occupied by service plazas; however, these facilities do not include electrical hook-ups for trucks (causing noise and air quality concerns for nearby neighborhoods).
- There is a need for the distribution of freight movement over an expanded portion of the 24-hour clock (most freight movement occurs during the 12-hour workday, 6:00 a.m. to 6:00 p.m., with the heaviest occurrence during the core business hours of 7:00 a.m. to 4:00 p.m.).

- The completion of the I-69 corridor between Indianapolis and Evansville will greatly improve truck and passenger flows in the southwestern portion of the State, while enhancing access to the Port of Indiana-Mount Vernon.
- Highway and bridge infrastructure improvements should be targeted toward key freight corridors.
- Congestion issues are relatively modest for the most part at the statewide level, however there is a realization that congestion is increasing. Current problem areas exist in the northwest part of the State due to the effects of Chicago, as well as on the east side of Indianapolis (particularly the northeast quadrant).
- Truck accessibility is a concern at the local level. Many cities have implemented partial or total truck bans, leading to complaints from truckers. Further, the trucking industry is not in strong support of a statewide truck routing system.
- At the state level, greater discussion is predicted regarding increasing truck size and weight limits to accommodate continuing growth in freight movements without unnecessarily impacting congestion.
- Generally speaking, the trucking industry is complimentary of the state agencies involved in regulation and enforcement, particularly the Indiana State Police, Department of Revenue, and Bureau of Motor Vehicles. The regulatory environment is “very friendly” to trucking, particularly due to a focus on efficiency.
- The trucking industry continues to support growth in Indiana, and recognizes that this is directly dependent upon growth in the manufacturing sector.
- Local (short-haul) trucking is highly reliant on the network of primary arterials throughout the State.

### **Railroad-Related Stakeholder Input**

Indiana is enmeshed by an intricate network of short-line, regional, and class I railroads, and accordingly, rail is second only to trucking (measured by weight) as a mode of freight transportation in the State. The rail industry has been pinpointed as a sector with significant growth potential, both because of the existing infrastructure and right-of-way in place, as well as its ability to develop intermodal facilities. All indications are that container traffic is an appealing option to both the shipping and manufacturing industries, and the issue of intermodal development has been on the radar screen of public officials and private industry representatives throughout the State for several years. The majority of rail-related comments derived from stakeholder interviews revealed specific areas for improvement and investment in the State’s rail infrastructure. Key points are summarized in the bullet points below:

- Demand for freight rail service is increasing nationwide, and rail companies are making targeted capital investments at a faster rate than in the past to relieve key bottlenecks throughout their national systems.
- There are several logical locations for intermodal facilities in Indiana, however funding arrangements remain a key concern.
- Rail connectivity with the East Coast is provided by NS and CSX; there is a demand for West Coast originating traffic destined for Indiana that can bypass Chicago.
- The potential of establishing new trailer on flat car (TOFC) service from Louisville to New Jersey presents an intriguing option for the trucking industry to efficiently deliver auto industry products to the East Coast.
- Specific areas for efficiency improvements include connectivity among and between operators through enhanced technology; consolidations among short-lines and continued abandonments (or fire sales) by Class I's of marginally operating infrastructure, shifting operations to local operators; and increased intermodalism to ensure economic development benefits remain in-state.
- With the nearest rail yard with West Coast connectivity in Joliet, Illinois there is demand from area businesses for a rail yard in the Indianapolis area to process freight to and from West Coast ports.
- Indiana's mining industry is reliant on rail's ability to transport high-volume, lower-value bulk commodities. Coal-specific comments are summarized below:
  - In many cases the Class I's are not interested in increased coal movement. Coal is less profitable than other commodities and the Class I's are near capacity on many lines.
  - Connectivity is lacking between southwestern Indiana, where the coal-fields are located, and the Class I Railroad mainlines and major ports of northern Indiana.
  - Reliability issues in rail delivery of coal are forcing power plants to maintain higher coal inventories. Capacity and bottleneck issues are also an issue if Indiana intends to export coal to a wide geographic area.
  - Although there is significant Class I mileage in Indiana, the railroads are focusing investments elsewhere. Indiana is part of a nationwide network, primarily serving pass-through traffic.
  - Increases in demand for rail movement of other commodities (containers, ethanol, grains) may further inhibit growth in the coal sector. However, it is also an opportunity for partnership with other industries (and the Ports of Indiana) as these other sectors are in need of infrastructure improvements as well.

- The Department of Natural Resources issues new coal extraction permits regularly, including at least one entirely new coal mine site in Gibson County, suggesting that Indiana has the potential to increase coal production to meet greater demand, if that demand can be satisfied by necessary transportation services.
- Numerous short-lines are moving coal between mines and plants. As far as exporting via rail, the challenge is connecting the coalfields to the Class I mainlines. Also, Class I railroads are not interested in moving coal short distances.

### **Air Cargo-Related Stakeholder Input**

From an economic development perspective, the State has set its goal on continuing to attract industries that fall into the light and specialty manufacturing sectors in order to build upon an already sizeable base. It is these specific and in some cases niche types of businesses that can realize the most potential from having access to reliable air cargo facilities. The primary appeal of shipping by air is that it can often provide a more timely, reliable, and secure service than other mode options. While Indianapolis International Airport is the State's largest cargo airport with commercial service, there is air cargo capacity at several other commercial airports within the State. Specific air cargo-related comments are summarized below:

- Consistent investment in air cargo from the private sector indicates solid growth potential.
- There is substantial growth potential in high-value, low-volume cargo handled by air.
- Perceptions of the manufacturing and logistics industry around Indianapolis are changing to reflect the air cargo capabilities and potential that are present.
- Opportunities exist for the development of niche markets that are reliant on time- and temperature-sensitive goods, such as pharmaceuticals.
- There is a need to convince freight forwarders to include Indianapolis International Airport in the mix of traditional hubs such as Miami, New York, Atlanta, and Chicago.
- The Indianapolis area is primed for aggressive economic development:
  - Available space exists for air cargo expansion at Indianapolis International Airport; and
  - Land is available for industrial/logistics-oriented uses.

## **Waterway-Related Stakeholder Input**

The State's waterway freight system has traditionally been largely defined by the agricultural and mining industries, as barge transport is well-suited for high-volume low-cost bulk materials. This pattern is shifting slightly due to an emerging ethanol market and discussions of integrating container traffic into Indiana logistics trends. Waterborne freight comments are summarized below:

- A continuation of recent trends in bulk commodities can be expected into the foreseeable future.
- There is a need to address the interdependence of fertilizer shipments (currently received from global sources).
- Sidings in fertilizer stations are getting more difficult and costly to maintain.
- There is significant potential for introducing container traffic to the Ohio River ports.
- There is a lack of sufficient lock and dam infrastructure on the inland waterway network.
- Privatization could be a means of improving efficiency of operations and management at public terminals.
- The potential exists for incremental expansion for inland waterway movement of certain intermodal cargo as fuel and transportation pricing increase as a percentage of TOC.
- Homeland security issues for domestic bulk shipments will be a growing concern in the near future.







## 3.0 Freight System Condition and Performance

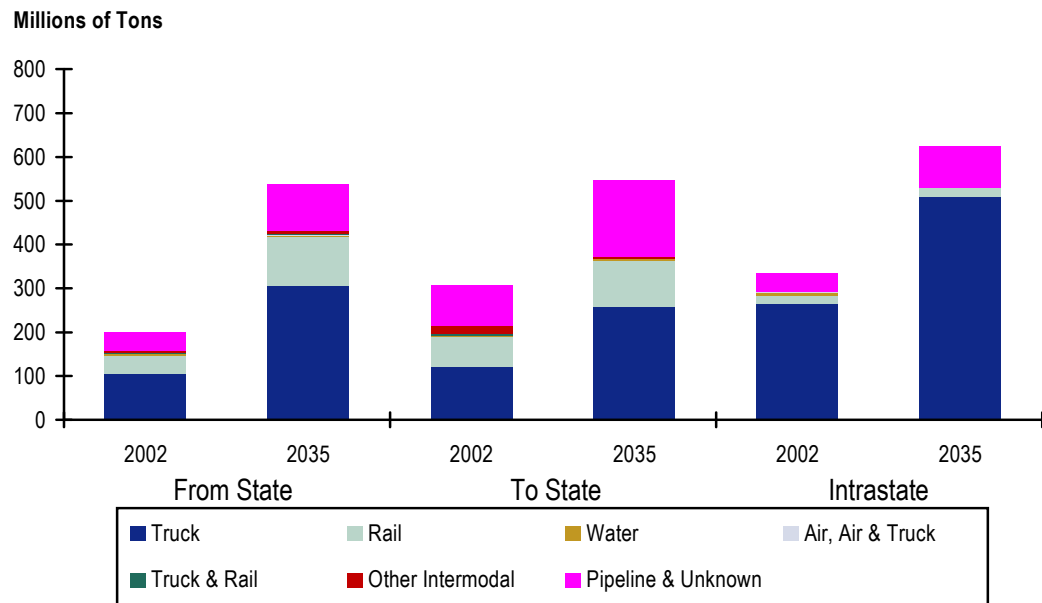
This section begins with a summary of the Freight Analysis Framework Version 2.2 (FAF2) data for the State of Indiana and a discussion of freight volumes into, out of, and through Indiana by mode. Following that initial background is a discussion of five modes of freight transportation (highway, rail, air, water, and pipeline), addressing both the infrastructure and freight activity for each mode. Commodity flow analysis and future projections are also included for the highway and rail modes. Following the discussion of freight infrastructure and flow patterns are sections addressing demand drivers (economic and demographic), transportation safety, and planned infrastructure projects.

### 3.1 SUMMARY OF FAF2 MODAL DATA FOR 2002 AND 2035

FAF2, a detailed origin-destination database developed by the Federal Highway Administration, is a useful source for growth rate forecasts for commodity flows across all modes in Indiana. The database estimates growth in five-year increments from 2010 to 2035 from a base-year of 2002. The framework distinguishes between movements *originating*, *terminating*, and traveling *within* the State. The database contains forecasts for commodity flows by weight and by value. Figure 3.1 depicts Indiana's current and future freight flows by weight for each flow type and mode of transportation. Sections 3.2 and 3.3 provide a more detailed analysis of commodity flows by weight for highway and rail using the INDOT Statewide Travel Demand Model (ISTDM) and waybill data, respectively. Section 3.4 uses more detailed Bureau of Transportation Statistics (BTS) data as a basis for air cargo tonnages, while in Section 3.5, Indiana marine port tonnages from the U.S. Army Corps of Engineers (USACE) are used.

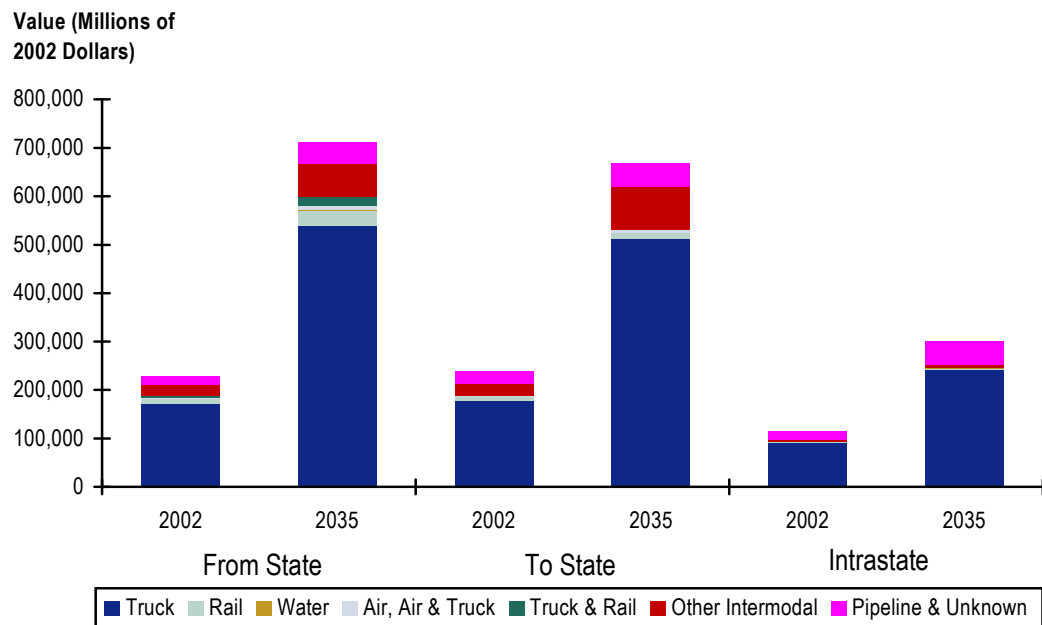
Figure 3.2 shows flows by value. According to FAF2 projections, total tonnage is expected to more than double between 2002 and 2035, while total value of freight movements is expected to more than triple.

**Figure 3.1 Total FAF2 Commodity Flows to, from, and within Indiana by Weight**



Source: FHWA, Office of Freight Management and Operations, Freight Analysis Framework 2.2, State of Indiana Profile.

**Figure 3.2 Total FAF2 Commodity Flows to, from, and within Indiana by Value**



Source: FHWA, Office of Freight Management and Operations, Freight Analysis Framework 2.2, State of Indiana Profile.

## **3.2 HIGHWAY/TRUCK**

### **Infrastructure and Demand**

The highway infrastructure throughout Indiana is highly conducive to the movement of freight by truck. The State is currently intersected by eight Interstate Highways: I-64, I-65, I-69, I-70, I-74, I-80, I-90, I-94 (Figure 3.3). An additional six local interstate routes include I-465, I-865, I-469, I-164, I-265, and I-275. These facilities provide direct access to most of the State's major freight intermodal facilities.

Figure 3.3 Interstate Highways in Indiana

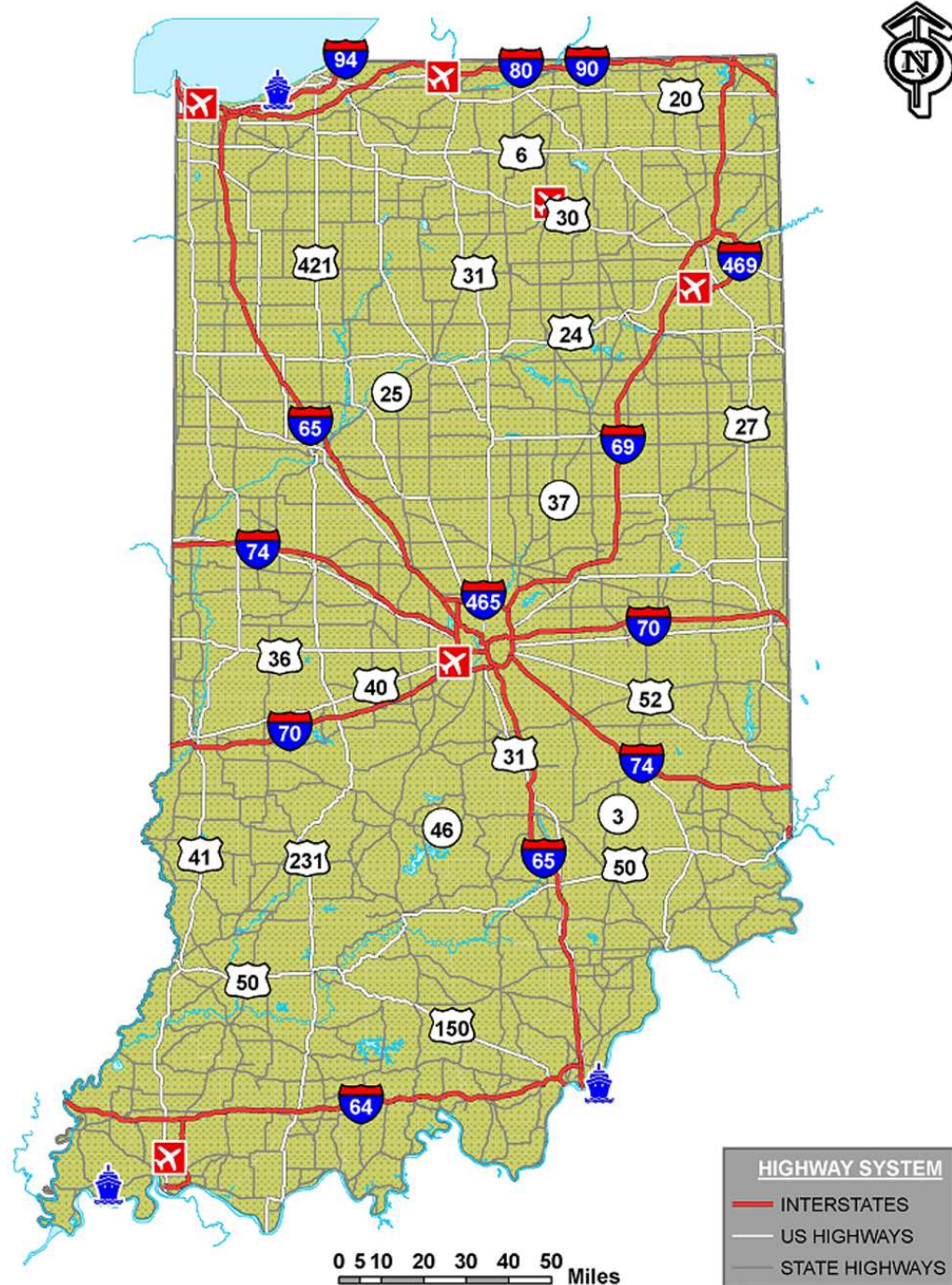
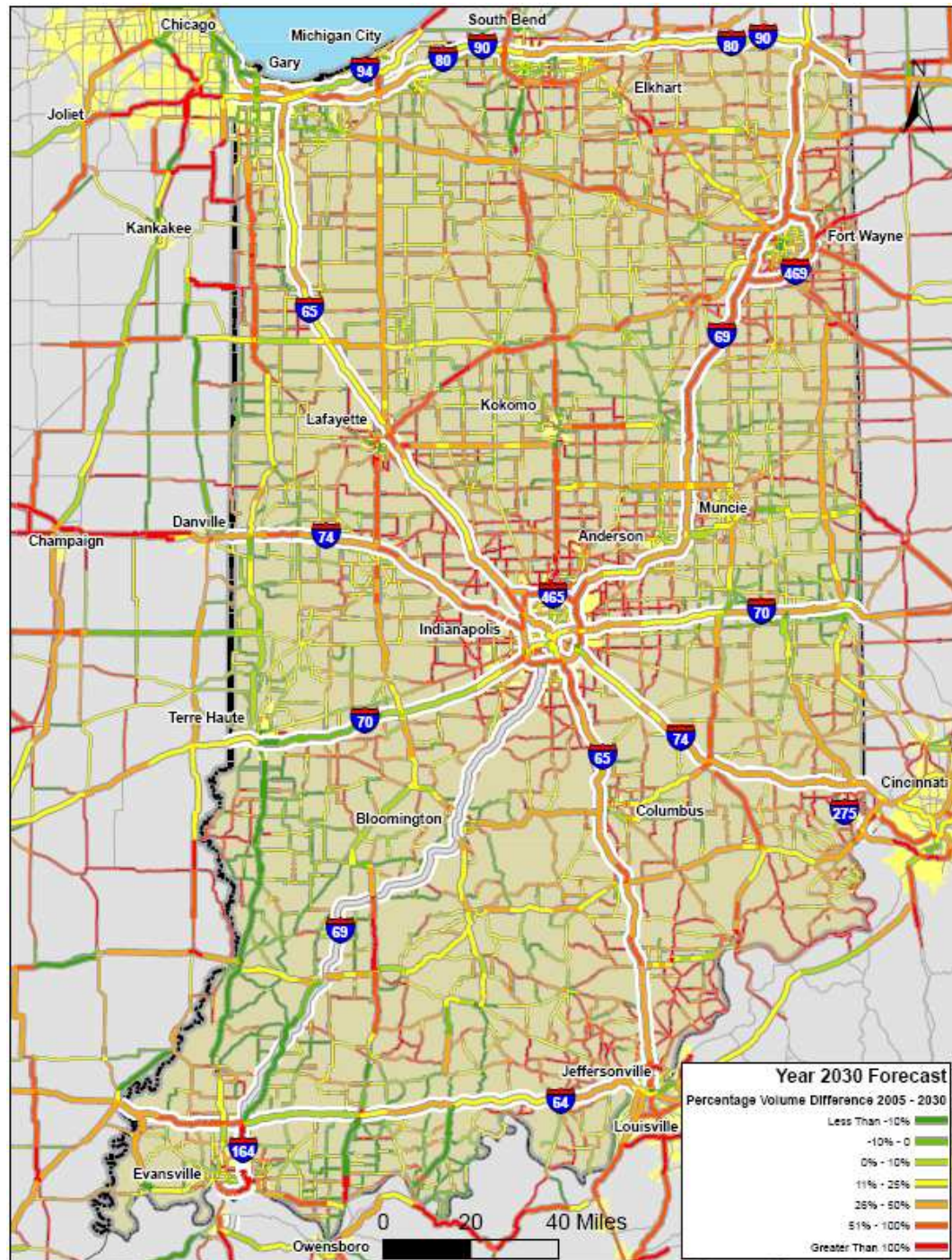


Figure 3.4 shows the change in total daily traffic volumes on Indiana's highway network between 2000 and 2030, based on the ISTDm. The highest volumes currently exist in the major urbanized areas: Northwest Indiana (I-80), the Indianapolis region (I-65, I-70, I-69, and I-465), and the Louisville region (I-64 and I-65).



**Figure 3.4 Statewide Change in Average Annual Daily Traffic**

Volumes continue to increase on those same heavily traveled facilities in urban areas and throughout the State. I-70 and I-74 are predicted to experience noticeable increases in intercity traffic volumes throughout Indiana (increasing on some segments by 60 percent), and I-65 is estimated to increase between Indianapolis and Louisville. However, with many interstates at or approaching capacity, a large portion of volume increases are expected to occur on other State-maintained routes, such as U.S. 12, U.S. 20, U.S. 52, and SR 62.

The highest truck volumes currently exist on I-80 in Northwest Indiana and along all of I-70 within the State. I-70 also has the largest percentage of trucks relative to total traffic, with many segments carrying over 35 percent trucks. U.S. 24, though it has a relatively small total volume, also has many segments on which more than 35 percent of the vehicles are trucks.

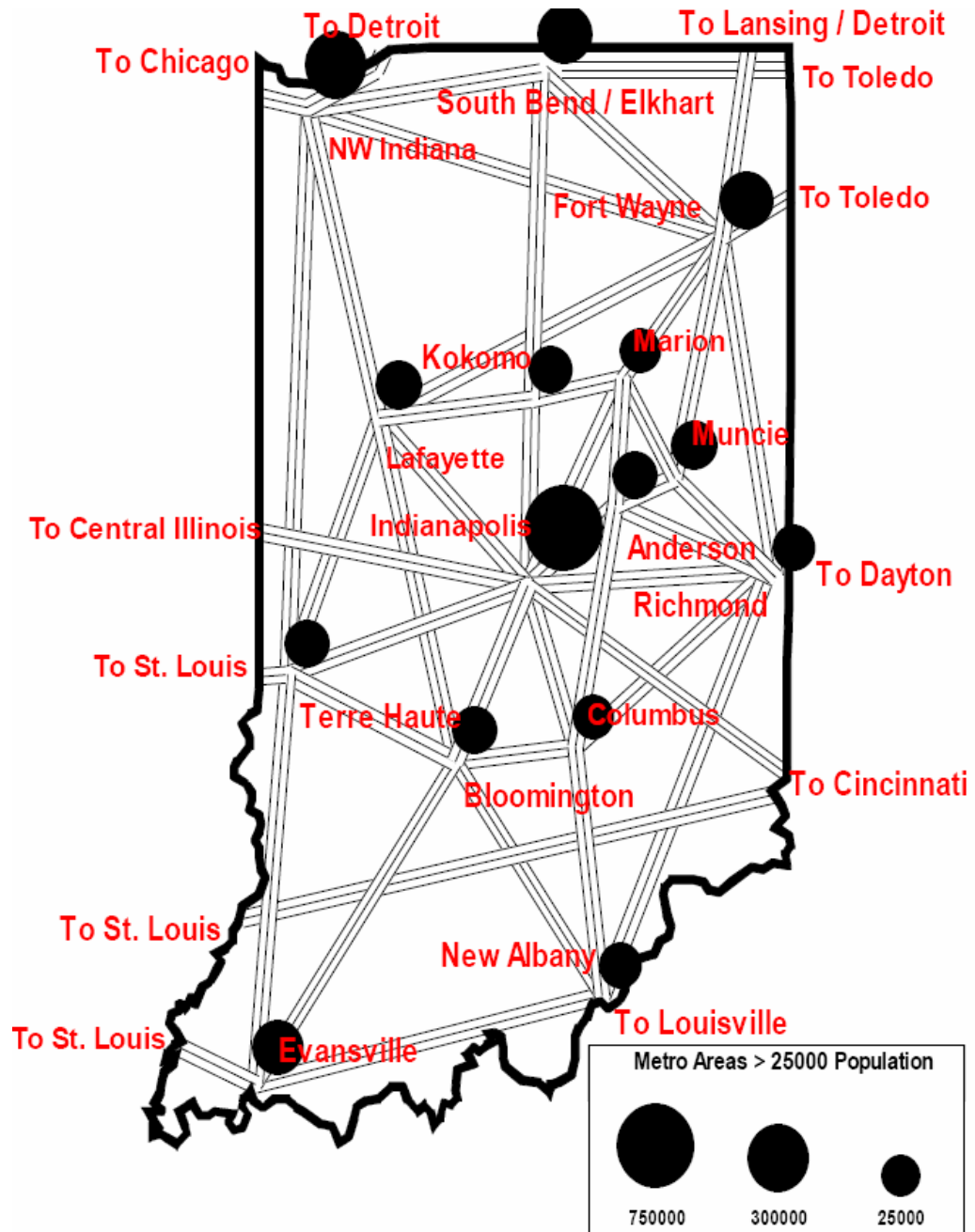
Between 2000 and 2030, increases in truck volumes are anticipated on all Indiana interstates. Truck volumes on I-74 and on I-80 east of Portage are expected to more than double; truck volumes on I-90 west of Portage are expected to more than triple. In 2030, numerous other State-maintained roadways besides interstates are expected to absorb much of the increased truck demand as well, with several additional major truck corridors emerging. U.S. 20 and SR 2 in northern Indiana; U.S. 30; SR 62 and U.S. 50 between Louisville and Cincinnati; U.S. 31; and U.S. 41 are among numerous highways that are expected to experience a doubling, tripling, or greater increase in truck traffic. Overall, truck traffic is anticipated to increase at a much faster rate than overall traffic throughout the State.

## **Truck Routes and Corridors**

Indiana does not have a designated statewide truck route program. However, based on Indiana statutes, the truck freight network is composed of Interstate highways, U.S. highways, state routes, and other principal arterials, subject to the dimensions authorized and to local restrictions. Among the potential restrictions on these routes for commercial vehicles are the State's posted bridges, which have designated weight and vertical clearance limits. These bridge locations can be found on the "Statewide Posted Bridge Map," which outlines the Interstate System as well as maximum clearance and the Extra Heavy Duty routes in the northern area of the State. These Extra Heavy Duty routes connect Hammond with South Bend and Michigan, and encircle Fort Wayne to the north and west, connecting it to Ohio.

The Indiana DOT 2030 Long-Range Transportation Plan identifies numerous corridors connecting the population centers of the State that "serve as the freight arteries of the state and are thus vital for economic development" (Figure 3.5). The current and future truck volumes from the ISTDM indicate that the majority of truck volumes are contained within these corridors. These major freight corridors can serve as a starting point for identifying corridors that should have high-priority truck routes.

**Figure 3.5 Statewide Mobility Corridors**



Source: Indiana DOT 2030 Long-Range Transportation Plan.

## Highway Commodity Flows

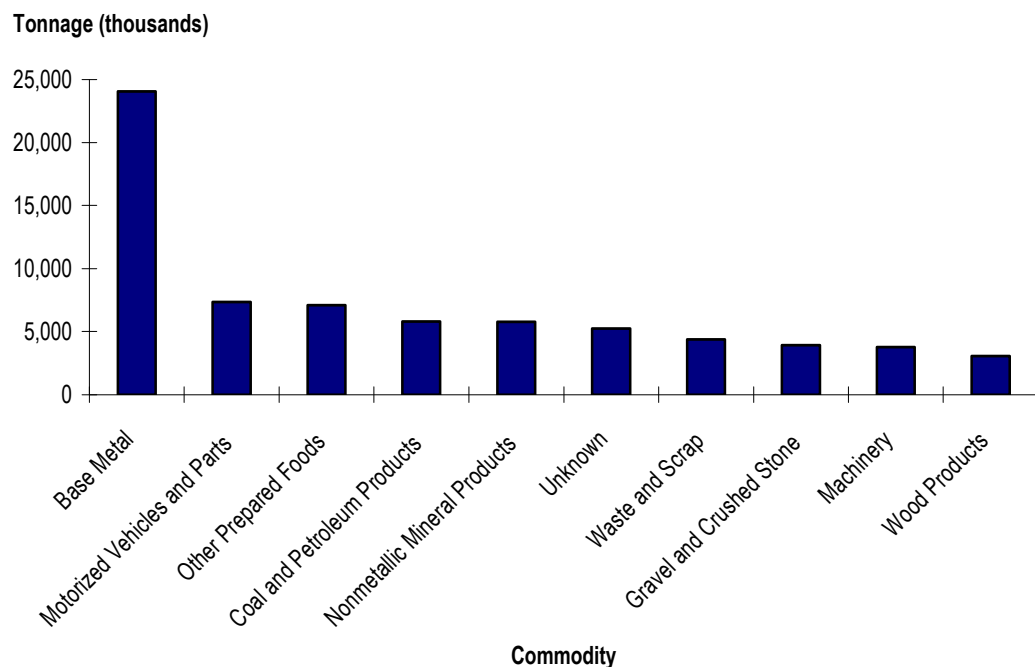
The truck-based commodity flows estimated in this section come from the freight component of the ISTDM and FAF2 data. Input into the model was derived from work done by Dr. William Black of Indiana University. These data are in turn based on the U.S. Census Bureau's Commodity Flow Survey (CFS) data. CFS data exclude or under represent several commodity categories resulting in the need for adjustments when using the data in the ISTDM. While the ISTDM adjusts freight truck estimates from CFS data using the Quick Response Freight Manual as well as origin-destination matrix estimation to match actual truck counts and ensure accurate truck flow estimates, resulting commodity totals may not be consistent with the FAF2 estimates.

Freight truck flows from the ISTDM were therefore converted back to commodities using the model's payload factors. Commodities were then factored to match FAF2 control totals for the three FAF2 zones in Indiana.

### *Indiana's Leading Highway Commodity Flows*

In 2002 an estimated 106 million tons of goods and materials left the State of Indiana by truck. Of this tonnage, base metals were the leading outbound commodity, comprising 23 percent of the total (Figure 3.6). Motorized vehicles and parts followed with 7 percent. Overall, the top 10 outbound commodities by truck comprise 66 percent of all outbound commodities.

**Figure 3.6 Top 10 Outbound Indiana Commodity Tonnages (by Truck)**  
2002

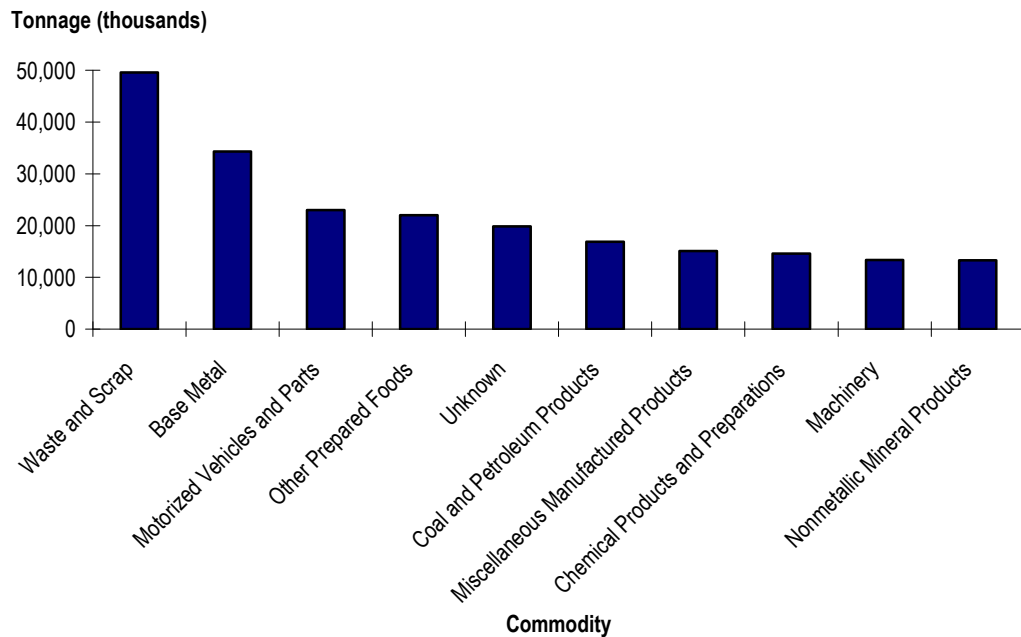


Notes: "Other Prepared Foods" includes all prepared foods except alcoholic beverages, milled grain products and preparations, bakery products, and meats and seafood.



Outbound commodities from Indiana by truck are expected to nearly triple to 306 million tons by 2035 (Figure 3.7). Base metal outbound tonnage will increase by 43 percent, but will only consist of 11 percent of total outbound tonnage. Waste and scrap is expected to be exported from the State in large quantities, and chemical products and manufactured products are expected to increase in outbound tonnage.

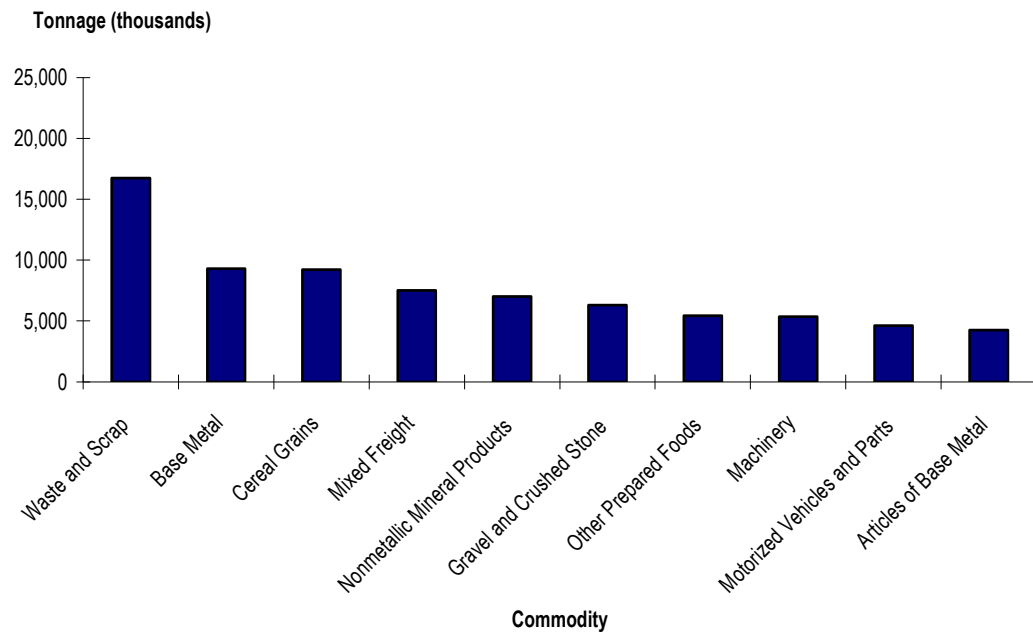
**Figure 3.7 Top 10 Outbound Indiana Commodity Tonnages (by Truck)  
2035**



Notes: “Other Prepared Foods” includes all prepared foods except alcoholic beverages, milled grain products and preparations, bakery products, and meats and seafood.

About 119 million tons of goods and materials are estimated to have entered Indiana by truck in 2002. Destined for various counties within the State, 14 percent of this tonnage consisted of waste and scrap, followed by base metals and cereal grains (Figure 3.8). Overall, the top 10 Indiana-bound commodities by truck comprised 64 percent of all Indiana-bound commodities by truck.

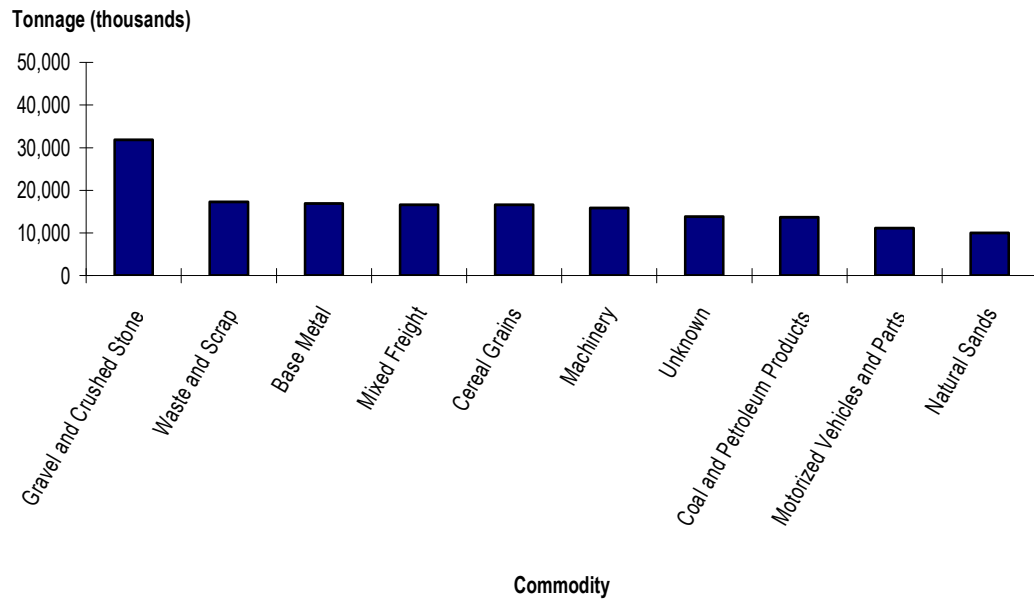
**Figure 3.8 Top 10 Inbound Indiana Commodity Tonnages (by Truck)  
2002**



Notes: “Other Prepared Foods” includes all prepared foods except alcoholic beverages, milled grain products and preparations, bakery products, and meats and seafood.

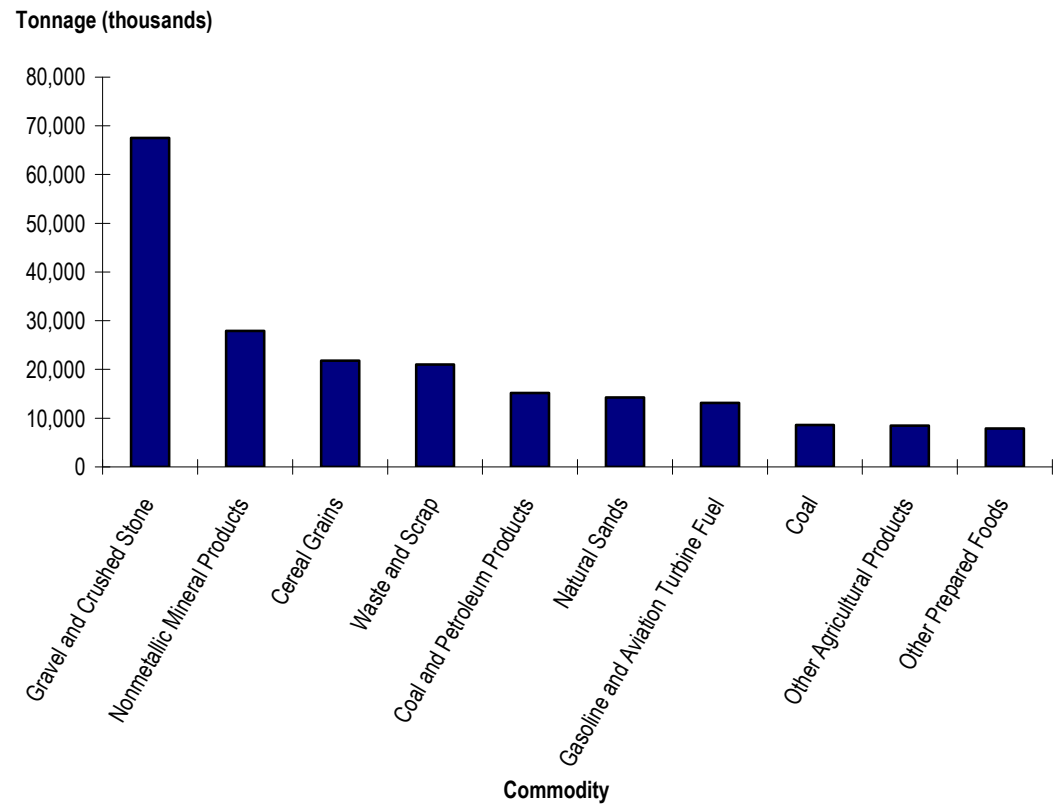
Inbound gravel and crushed stone shipments by truck from out of state are expected to increase five times by 2035 (Figure 3.9). With the exception of waste and scrap, which barely increases through 2035, most other currently prominent inbound commodities are expected to increase. Inbound coal and petroleum products and natural sands are predicted to increase in import tonnages by truck.

**Figure 3.9 Top 10 Inbound Indiana Commodity Tonnages (by Truck)**  
2035



An estimated 266 million tons of commodities traveled from county to county within Indiana by truck in 2002. About 25 percent, or 67 million tons, consisted of gravel and crushed stone; another 10 percent consisted of nonmetallic minerals. The top 10 commodity tonnages comprised 77 percent of all intrastate commodity flow tonnages by truck (Figure 3.10).

**Figure 3.10 Top 10 Intrastate/Local Indiana Commodity Tonnages (by Truck)**  
2002

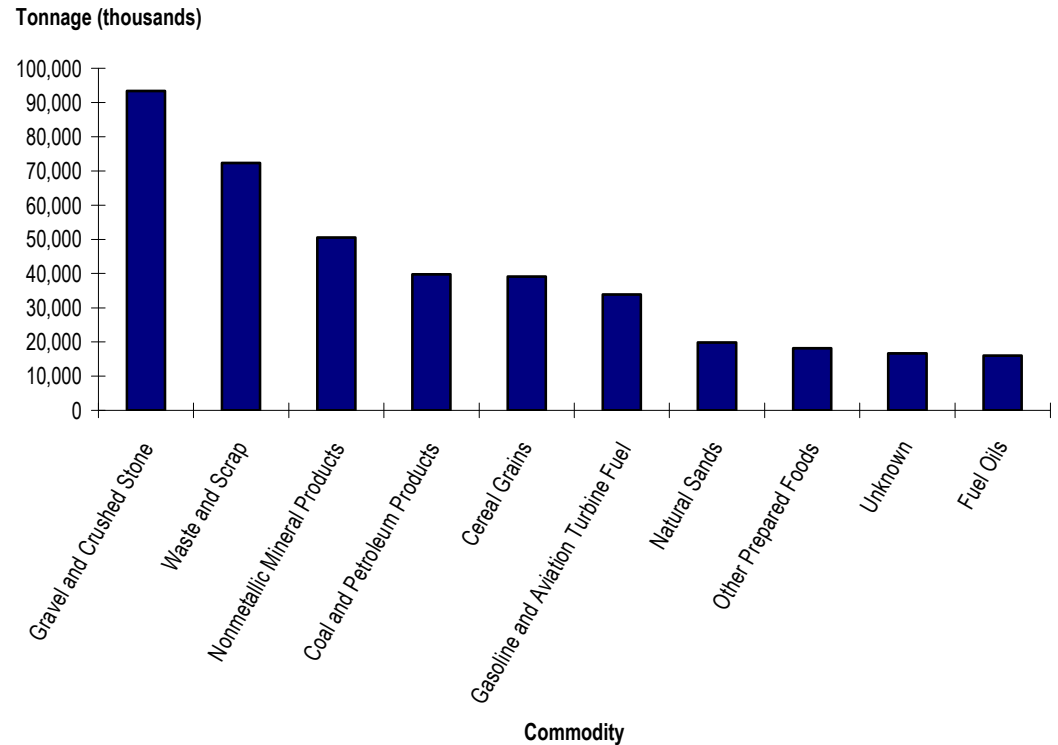


Notes: “Other Prepared Foods” includes all prepared foods except alcoholic beverages, milled grain products and preparations, bakery products, and meats and seafood.

“Other Agricultural Products” excludes live animals and fish, cereal grains, and animal feed.

Most of the prominent intrastate truck commodities are expected to continue to be the top commodities in 2035 (Figure 3.11). Gravel and crushed stone tonnage by truck is predicted to increase by nearly 40 percent, but will consist of only 18 percent of total intrastate truck tonnage.

**Figure 3.11 Top 10 Intrastate/Local Indiana Commodity Tonnages (by Truck)  
2035**



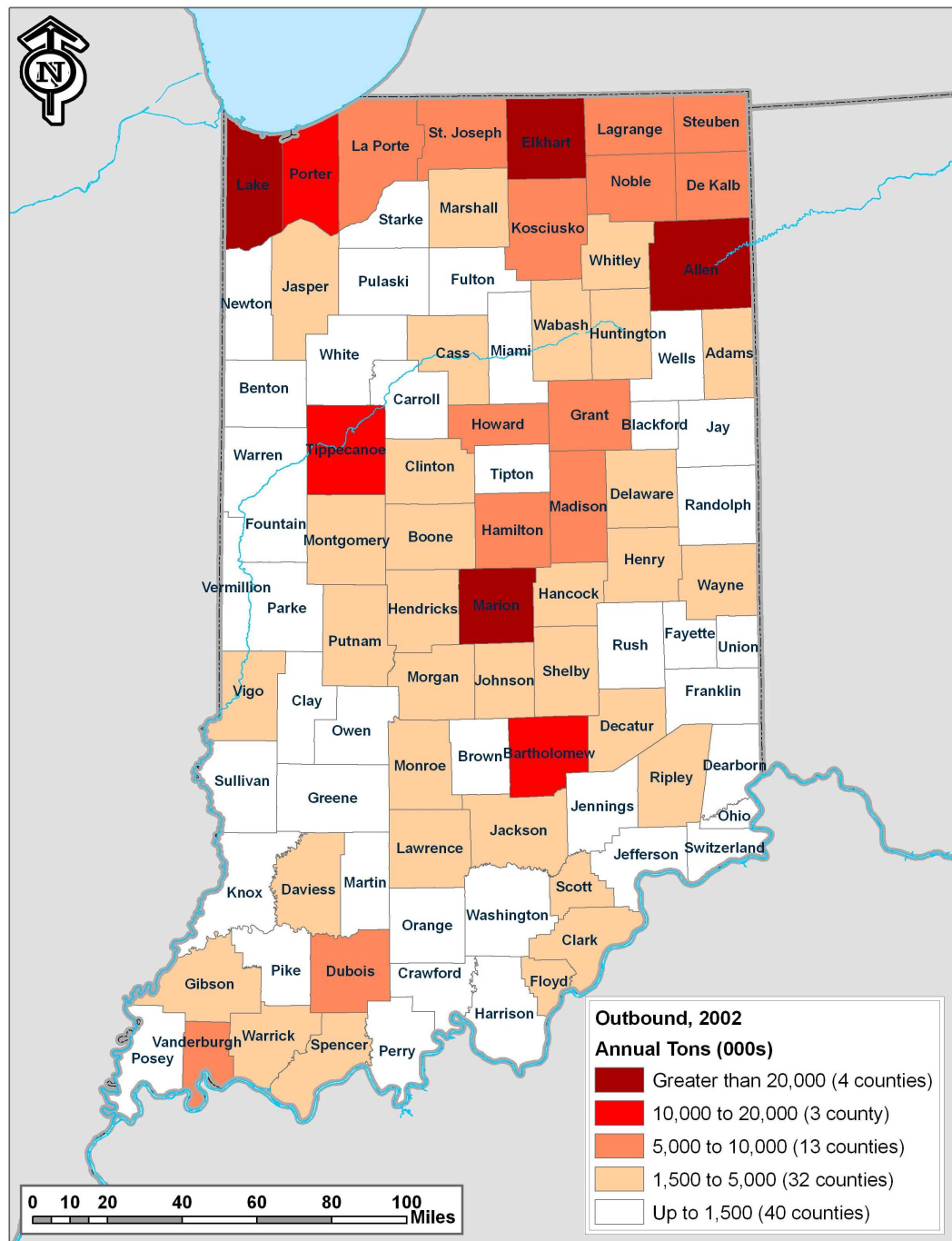
Notes: “Other Prepared Foods” includes all prepared foods except alcoholic beverages, milled grain products and preparations, bakery products, and meats and seafood.

### *Highway Commodity Flows by County*

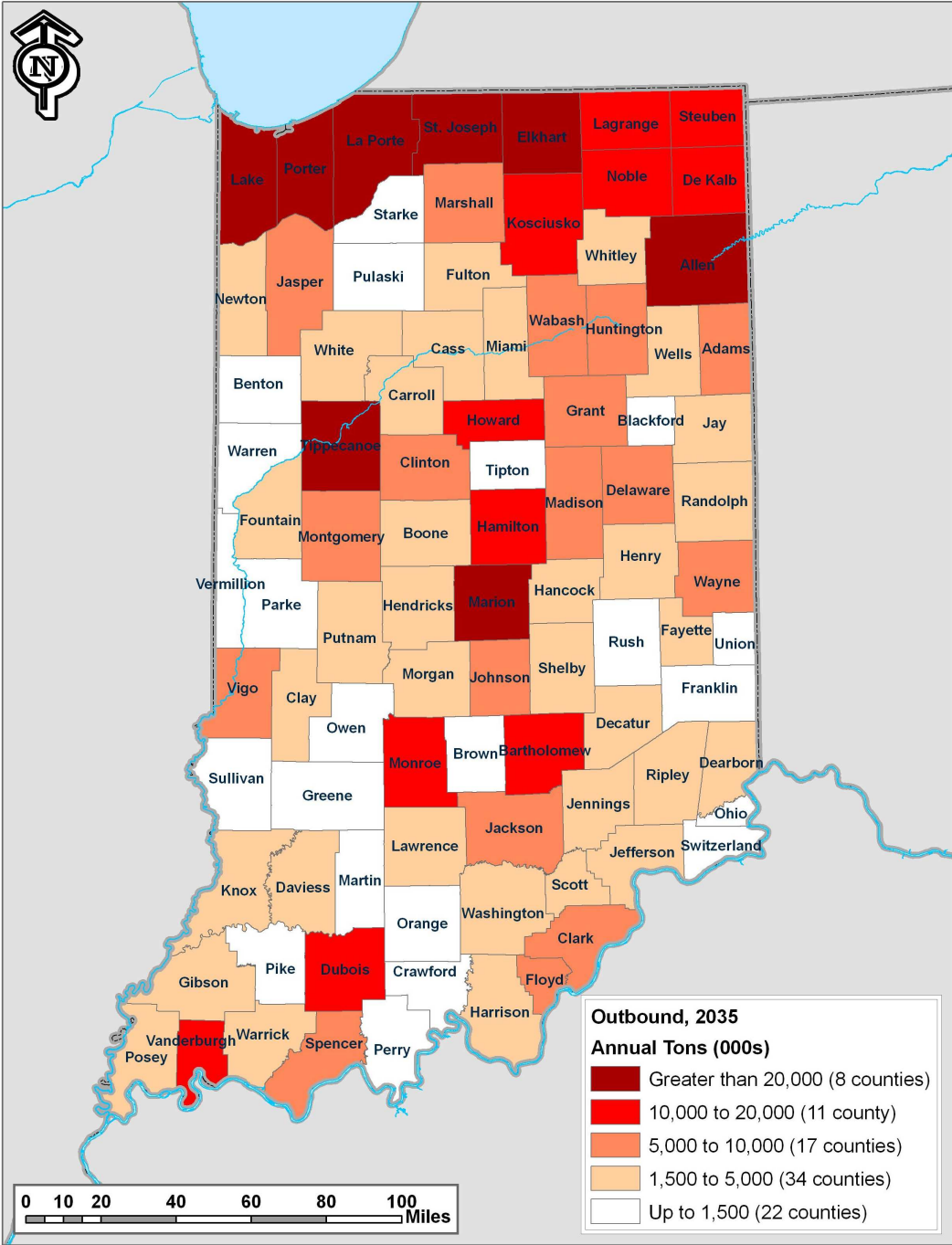
Lake County is the leading origin of truck-based commodity flows in Indiana, destined for other Indiana counties or out of state locations. About 44 million tons, or 12 percent, of the outbound commodities originated there. Base metals; coal and petroleum products; and fuel were the leading commodities. Another 9 percent of truck-transported outbound commodities originated in Marion County, followed by Allen, Elkhart, Porter, and Tippecanoe Counties. The distribution of truck commodity flows by Indiana county of origin in 2002 is depicted in Figure 3.12.

In 2002 only four Indiana counties had outbound truck flows greater than 20 million tons annually; by 2035 that number is expected to increase to eight, with Lake County being the leading exporter. Marion, Elkhart, Allen, and Porter follow. Among the leading commodities are coal and petroleum products, fuel, and waste and scrap. The distribution of truck commodity flows by Indiana county of origin in 2035 is depicted in Figure 3.13.

**Figure 3.12 Indiana Truck Commodity Flow Origins**  
2002



**Figure 3.13 Indiana Truck Commodity Flow Origins**  
2035

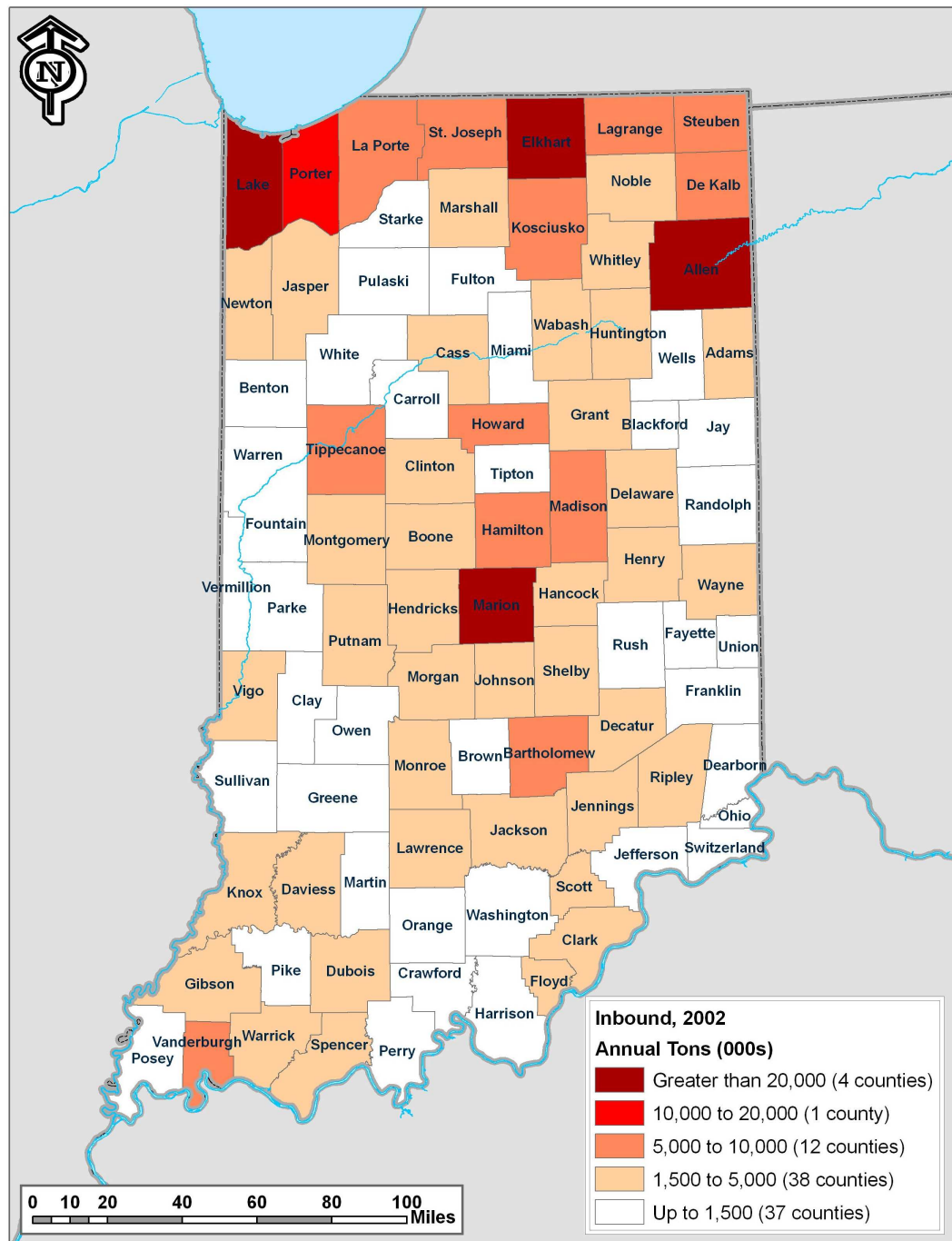


Similar to originating commodity flows, Marion County was the biggest destination in Indiana for truck-based commodity flows in 2002. About 47 million tons, or 12 percent, of truck-based commodities terminated there. Cereal grains and gravel and crushed stone comprised 33 percent of these commodities. Lake County followed close behind with 11 percent of Indiana's terminating commodity truck flows, followed by Allen and Elkhart Counties, which all received 20 million tons or more of commodities by truck. The distribution of truck-based commodity flows by Indiana destination county in 2002 is depicted in Figure 3.14.

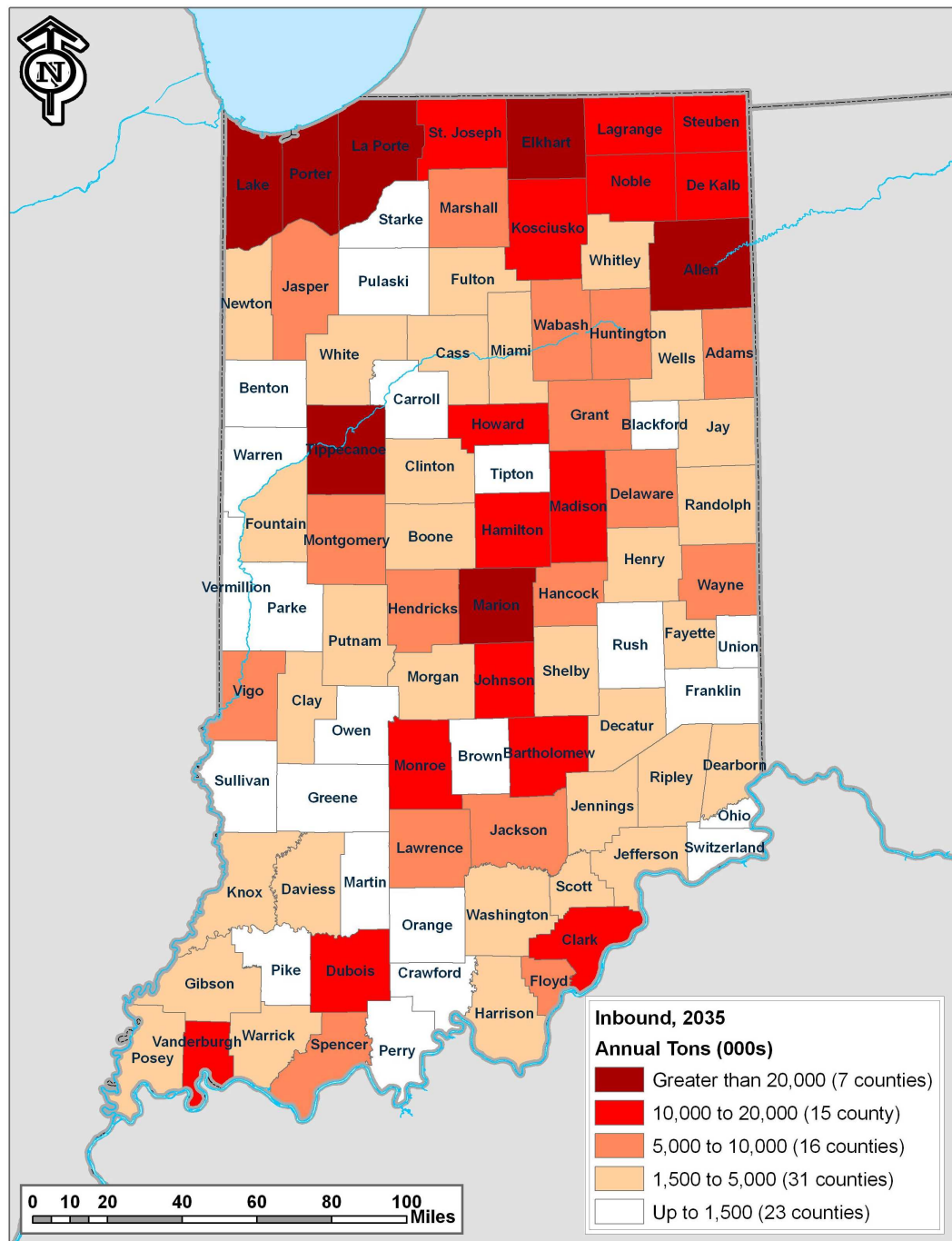
Inbound commodity flows by truck to Marion County are expected to nearly double to 82 million tons by 2035. The most prominent commodities are gravel and crushed stone, cereal, and waste and scrap. Lake follows closely behind with 63 million tons expected, followed by Allen, Elkhart, Porter, Lake, and Tippecanoe Counties. The distribution of truck-based commodity flows by Indiana destination county in 2035 is depicted in Figure 3.15.



**Figure 3.14 Indiana Truck Commodity Flow Destinations**  
2002



**Figure 3.15 Indiana Truck Commodity Flow Destinations  
2035**

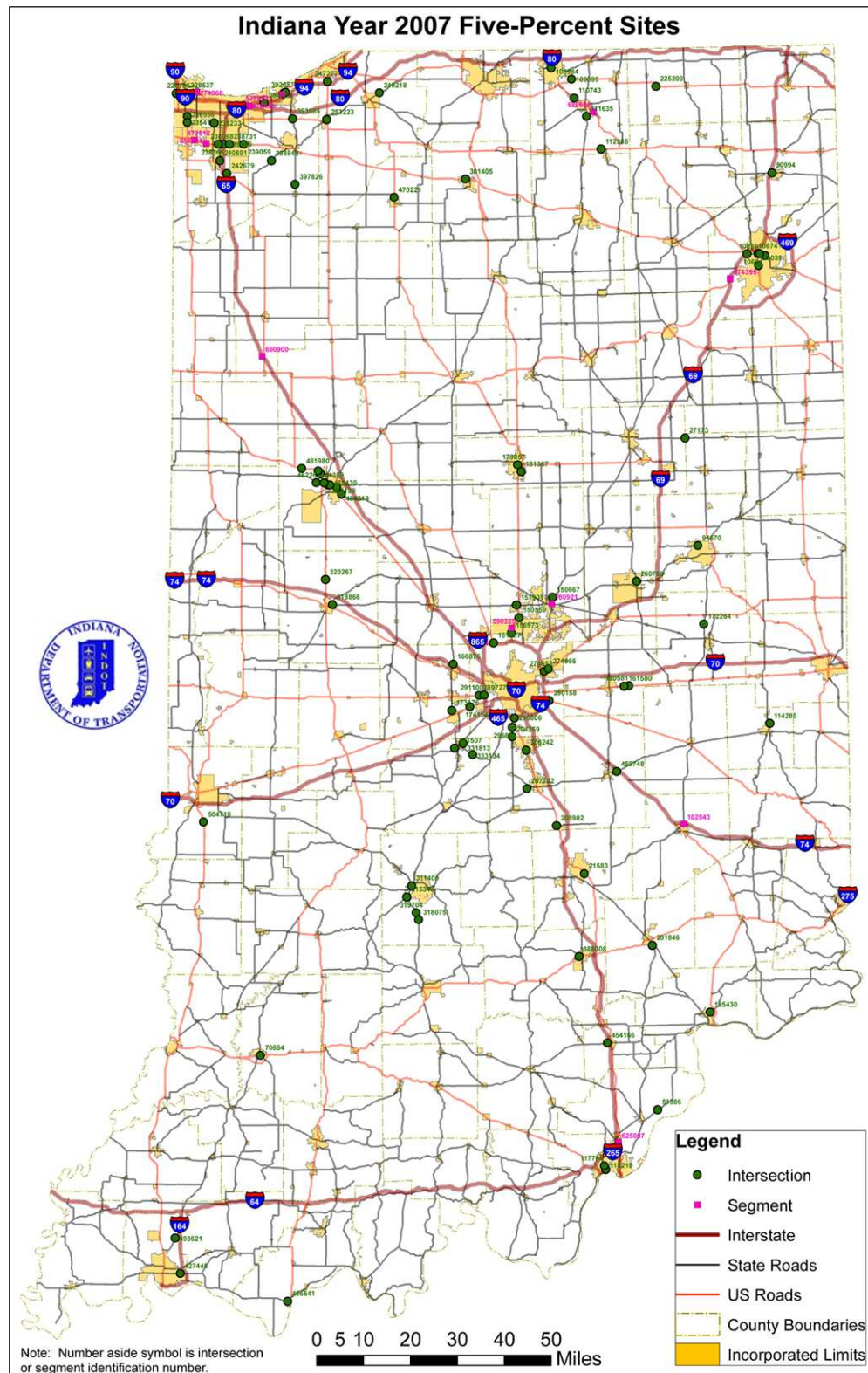


## **Highway Accidents and Incidents**

The *Indiana 2007 Five-Percent Report* identifies *road intersections*, *road interchanges*, and *road segments* with an overrepresentation of crashes. The method for identifying these locations is based on a Crash Loss Index (a weighted composite of crashes by severity, compared to the statewide average) for a given location. The *Five-Percent Report* for 2007 examined all segments and intersections on State and Federal highways, including intersections with local roads (INDOT's long-term goal is to include all public roads in the analysis). The analysis yielded a list and map of 110 intersections, interchanges, and segments, representing 0.17 percent of all crashes in Indiana from 2004-2006, and 6.4 percent of serious and fatal crashes. The results are broken down by location type and geography (urban versus rural and intersection/interchange versus segment) but do not isolate commercial vehicle crashes from all other crashes. Figure 3.16 is the map of 2007 Five-Percent locations in Indiana.

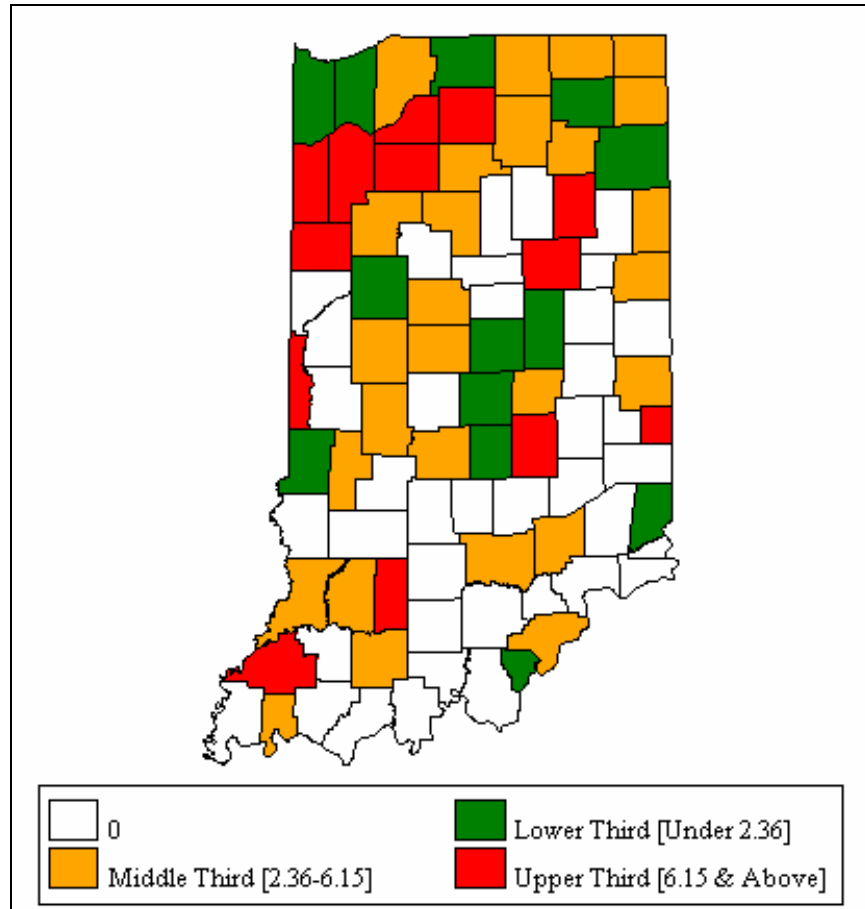
Data from the National Highway Traffic Safety Administration's National Center for Statistics and Analysis identifies truck-involved crash rates by county. Figure 3.17 compares each county in Indiana to the national average for large truck-related fatality rates in 2006, measured in fatalities per 100,000 residents.

Figure 3.16 INDOT 2007 Five-Percent Map



Source: Indiana Department of Transportation.

**Figure 3.17 Large Truck-Involved Crash Fatality Rates in Indiana Counties  
(Fatalities per 100,000 Residents) Compared to National Average  
2006**



Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration.

## **Highway System Performance**

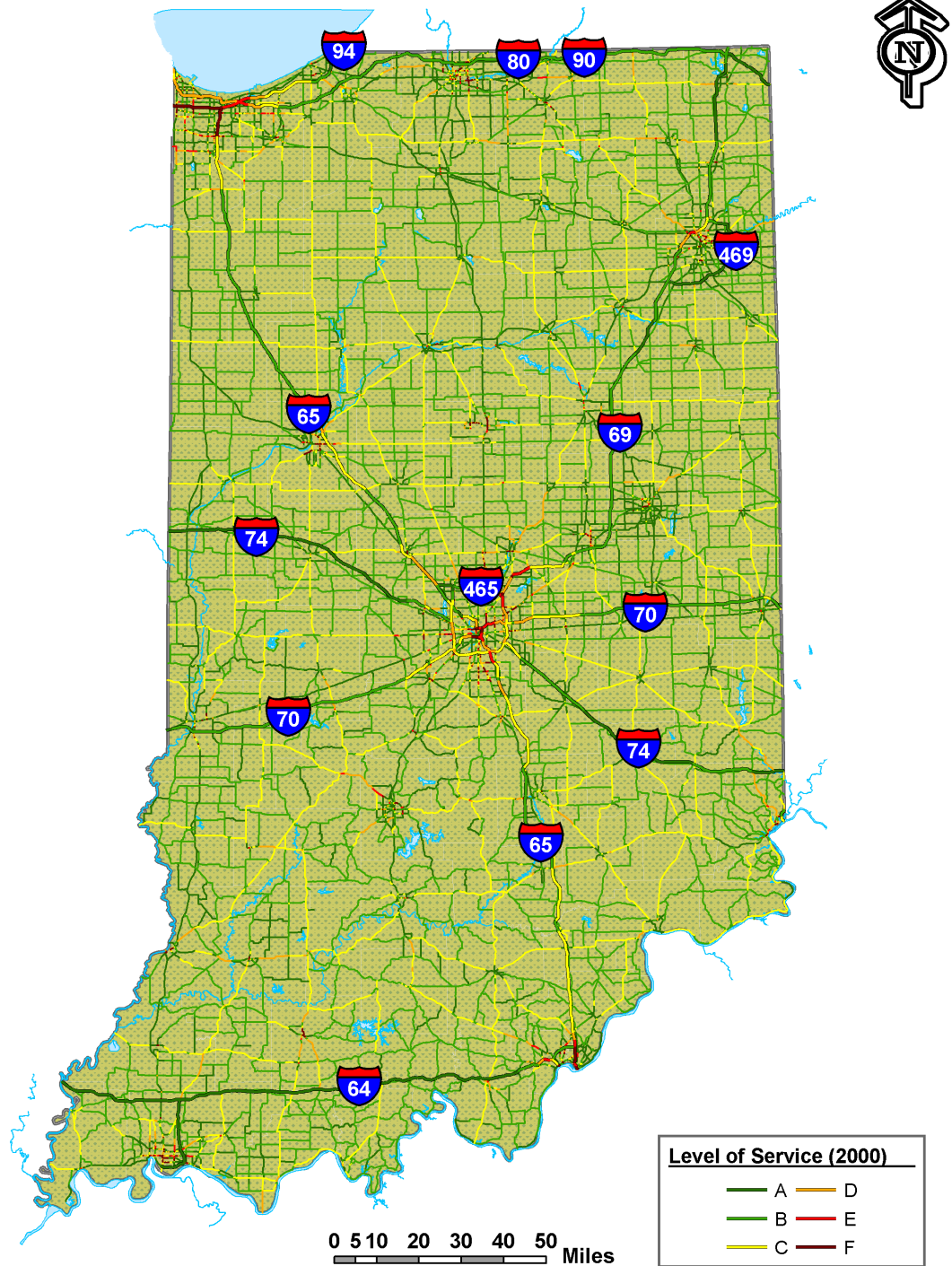
Figure 3.18 and Figure 3.19 show the Level of Service (LOS) of Indiana's highway network in 2000 and 2030, respectively, as derived from the ISTDM. Statewide, 2000 Levels of Service are primarily A, B, and C (below capacity), with segments at E and F (at or above capacity) within and including the I-465 belt around Indianapolis and along I-80 and I-65 in Northwest Indiana. There are also a number of LOS E and F roadway segments around Louisville, Evansville, Bloomington, Fort Wayne, Kokomo, Lafayette, and South Bend. In many of these areas, the worst performing roads tend not to be the primary Interstates, but rather secondary state highways. Most intercity routes are operating between LOS A and C.

By 2030 most Interstate segments are expected to operate at LOS C or worse. A large increase of LOS E and F segments is expected in Northwest Indiana and the Indianapolis area. The ISTDM also indicates that Southeast Indiana, particularly along the SR 62/U.S. 50 corridor, will see degraded traffic conditions. Overall, in 2000 only 570 miles of roadway were estimated to be at LOS D or worse; by 2030, that number is expected to increase to 1,055 miles, or about 10 percent of the State highway network.

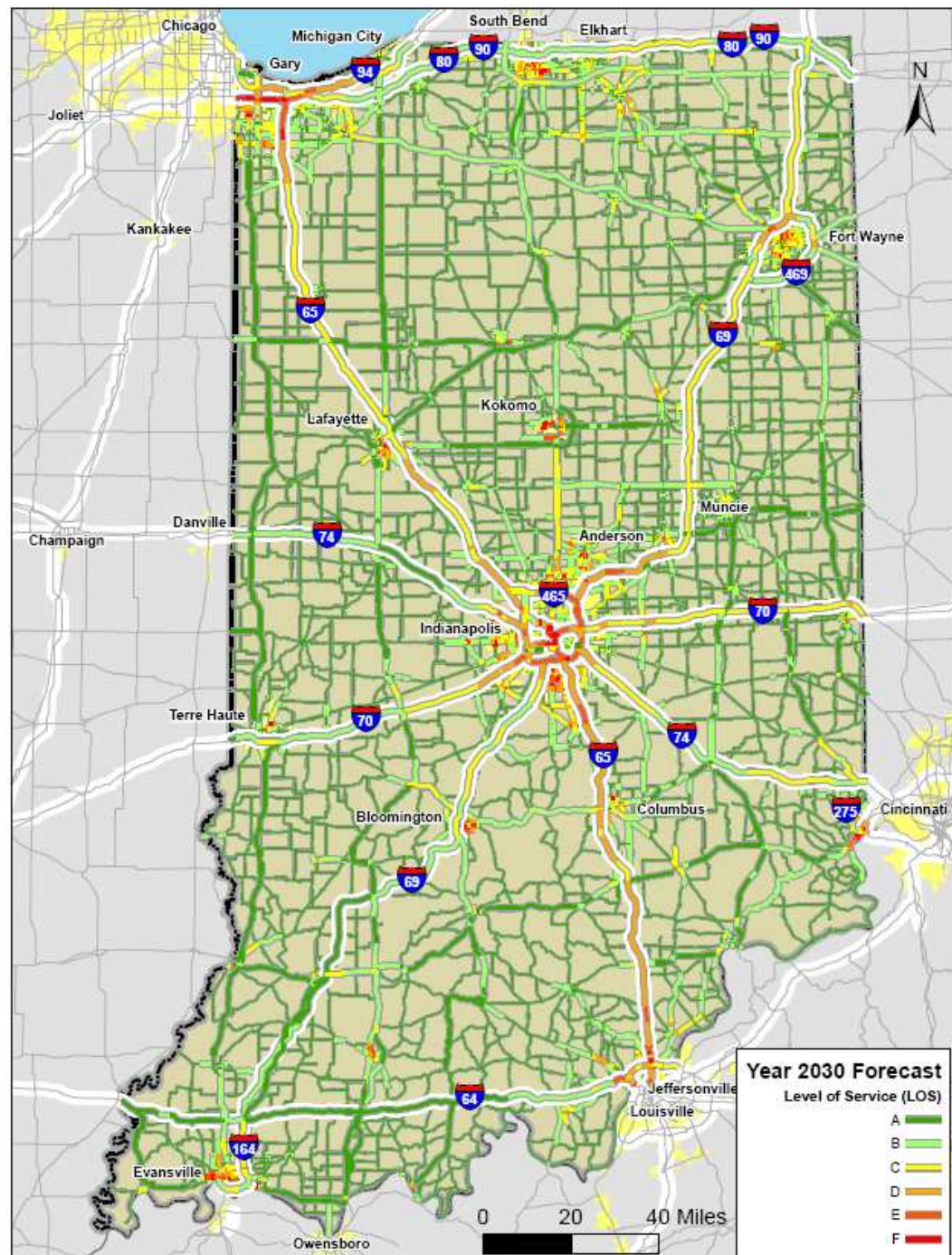
As a result of increasing traffic and degrading LOS, speeds along many roadways without currently planned capacity improvements are expected to decrease. All of I-65, and I-70 and I-74 east of Indianapolis, are expected to operate daily in 2030 at speeds one to five miles per hour lower than current averages. I-80, I-90, and I-94 will also experience lower average speeds, with portions of I-94 and I-80/94 expected to operate on average five to 30 miles per hour slower than current conditions. U.S. 31 north of Indianapolis, SR 9 east of Indianapolis, and the SR 62/U.S. 50 corridor in southeast Indiana are also anticipated to experience slower travel conditions in 2030. Many of these roadways match the corridors with heavy truck volumes now and in the future.



**Figure 3.18 Statewide Highway Level of Service**  
2000



**Figure 3.19 Statewide Projected Highway Level of Service  
2030**





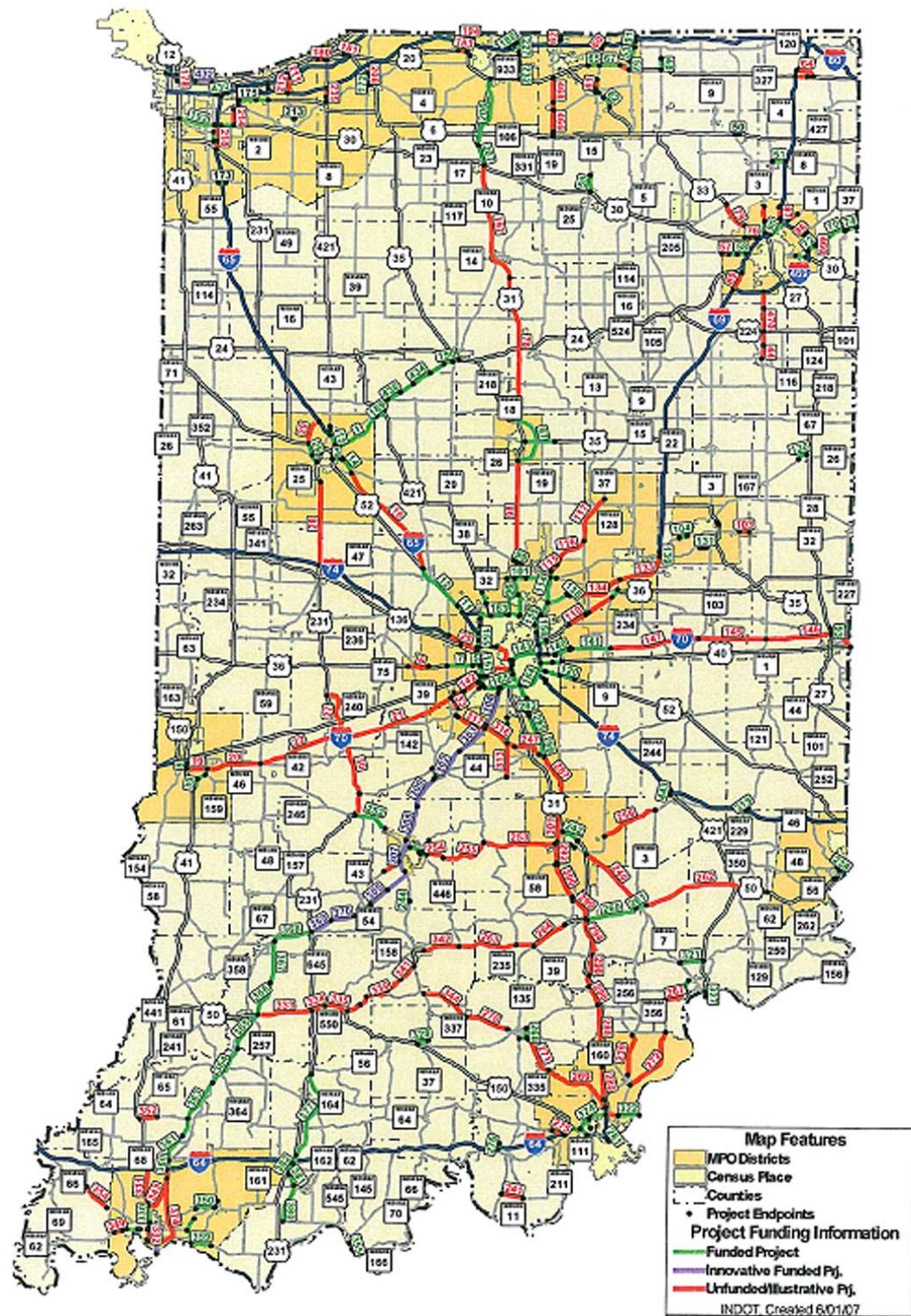
## **Planned Infrastructure Investments**

In 2006 legislation was passed introducing a new funding source for more than 400 construction and major preservation highway projects programmed by INDOT for 2006 through 2015, known as the Major Moves program. The legislation resulted in an agreement to lease the Indiana Toll Road (ITR) to a private concessionaire for a term of 75 years, an arrangement worth more than \$3.8 billion to the State. The Major Moves program includes additional funding categories for local jurisdictions in all counties throughout the State as well as special funds for counties in which the ITR is located. The majority of business expansion and relocation projects in the State are reliant on efficient access to the Interstate System, so an indirect impact of this renewed dedication to highway infrastructure investment is that businesses have invested along major corridors as well.

The INDOT 2030 Long-Range Transportation Plan, completed in 2007, contains a fiscally constrained project list, divided into five funding periods. The first two periods, 2006 to 2010 and 2011 to 2015, consist entirely of committed projects that are part of the Major Moves program. The subsequent three funding periods, which extend through 2030, consist of currently unfunded projects that are ordered based on project selection scores and projected available funding. INDOT allocates funding for future projects based on an 80/20 split where 80 percent of funding is reserved for Interstate projects. Figure 3.20 is the future project map included in the 2030 LRTP. The project lists in that document also divide projects by INDOT district and by MPO.

Generally, the projects included in the INDOT LRTP rarely address freight modes other than highway, nor do they address intermodal projects. Such projects are generally funded by other State agencies, such as the Ports of Indiana, or, more commonly, are funded through the private sector, the municipalities, the MPOs, or cooperatively among more than one of these groups. A prominent example of this was the Four Cities Consortium in Northwest Indiana, in which the cities of Hammond, Whiting, Gary, and East Chicago were working with the Northwestern Indiana Regional Planning Commission, the Federal Highway Administration, and the private railroads, on a project to relocate key rail lines and eliminate up to 30 grade crossings.

Figure 3.20 2030 INDOT Long-Range Transportation Plan Projects



### 3.3 RAIL

#### Infrastructure and Level of Service

##### *Rail Network*

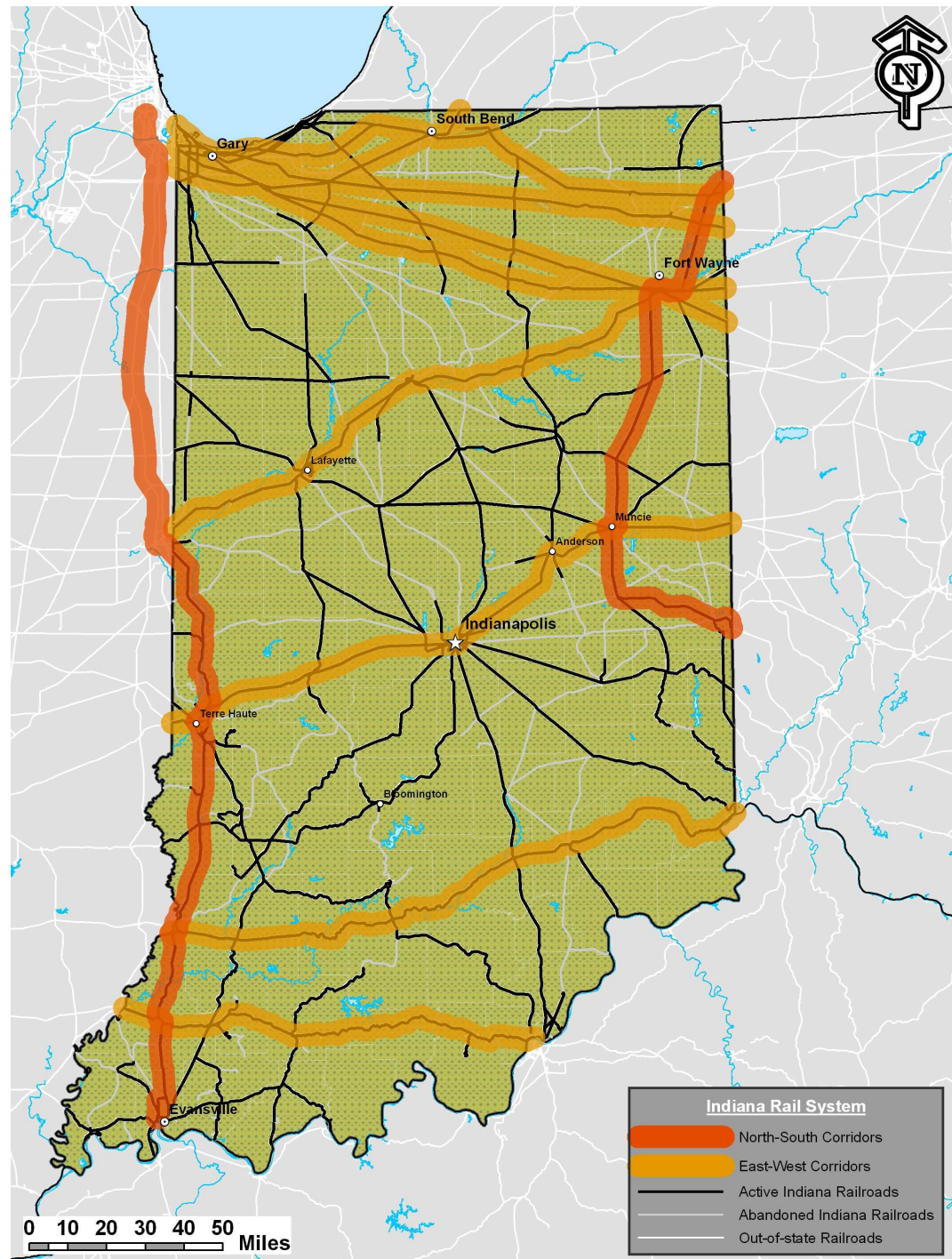
Three of North America's seven Class I rail operators provide service within the State of Indiana: CSX Transportation, Inc. (CSX), Norfolk Southern (NS), and Canadian National (CN). In addition, 35 short-line and regional carriers operate in Indiana. According to the Association of American Railroads (AAR), in 2005, the State's rail network included 4,165 route miles (excluding trackage rights), with 88 percent of those being operated by Class I companies. The dominant operators are CSX and NS, which operate 76 percent of all Indiana route miles.

The recent acquisition of the EJ&E by CN will likely divert some CN traffic from lines heading into Chicago to the EJ&E's 198-mile circumferential line around Chicago from Waukegan, Illinois to Gary, Indiana where the CN mainline intersects it. The EJ&E connects with all the major railroads entering Chicago, serving steel mills, petrochemical customers, and distribution centers, and handling a range of commodities including bulk raw materials and finished products. Coal is also moved to utility plants in Illinois and Indiana via the EJ&E. This acquisition should result in substantial changes in rail traffic patterns in northwest Indiana and neighboring Illinois, with some EJ&E segments experiencing a significant increase in trains while certain existing CN segments would see a reduction. According to documents distributed at the STB's January 2008 EIS scoping meetings, the volumes on the rail segment from Chicago Heights, Illinois to Griffith, Indiana will increase from 10 to 34 trains per day; from 8 to 29 trains per day between Griffith and Van Loon;; from 10 to 30 per day between Van Loon and Cavanaugh; and between Cavanaugh and Gary from 12 to 32 per day.

There are eight major east-west rail corridors crossing Indiana, four that radiate from Chicago, and four that radiate from St. Louis. These represent some of the most heavily traveled rail corridors in the nation, particularly the CSX, NS, and CN lines out of Chicago. There are only two major north-south lines through Indiana, one operated by CSX that follows the Illinois border, and one operated by NS that follows the Ohio border. Of these 10 major rail corridors, the only one that passes through Indianapolis is the CSX east-west line between St. Louis and the east coast. Figure 3.21 shows current active and abandoned rail lines in Indiana.



**Figure 3.21 Active and Abandoned Rail in Indiana**



Source: Indiana DOT, 2005. Obtained from Indiana Geological Survey, *A GIS Atlas for Indiana*, [http://129.79.145.7/arcims/statewide\\_mxd/download.html](http://129.79.145.7/arcims/statewide_mxd/download.html).

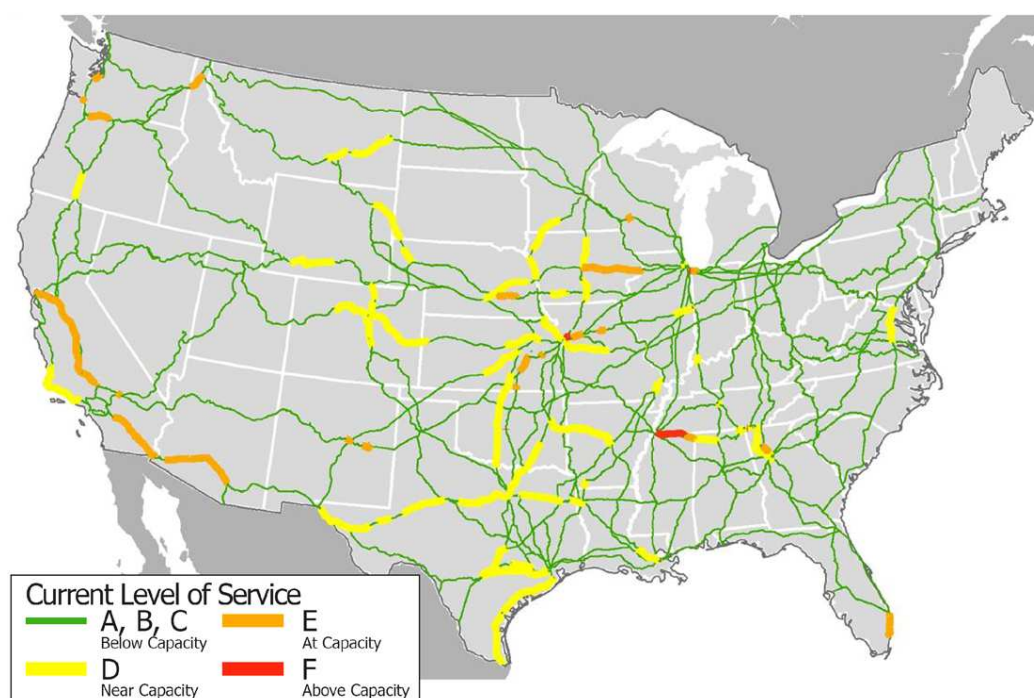
In 2007, 5.3 track-miles owned by Class I railroads and 2.4 track-miles owned by short-line and regional carriers were abandoned in Indiana (Table 3.1). Over the past five years, 85 miles have been abandoned by all railways in Indiana.

**Table 3.1 Abandoned Track-Miles in Indiana**

	2003	2004	2005	2006	2007
Class 1	34.6	5.9	8.6	0	5.3
Short-Line/Regional	0.6	0	24.9	2.6	2.4

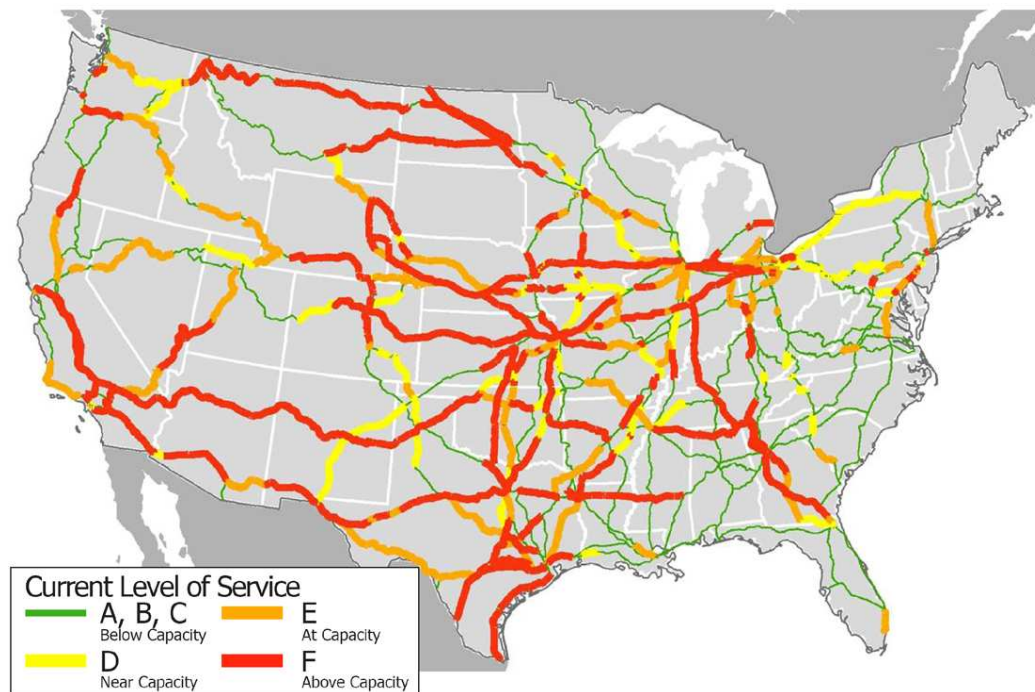
Source: Indiana Railroad Abandonments, Indiana DOT.

In September of 2007, the AAR released a report which served as an “assessment of the long-term capacity expansion needs of the continental U.S. freight railroads.” Focusing on Class I primary freight rail corridors, the study developed an estimate of infrastructure investment needs for the 2007 to 2035 timeframe based on U.S. DOT projections of population growth, economic development, and trade. Using extensive waybill data, assumptions about railway capacity, and data from the railroads, the project team developed a current LOS rating for each segment of the primary corridors. This is shown in Figure 3.22. The study used commodity flow growth projections to determine the future level of service on the same network, assuming no capacity improvements are made. Predicted LOS in 2035 without improvements is shown in Figure 3.23. Figure 3.22 and Figure 3.23 indicate that some rail segments in northwest Indiana are already operating at capacity, and that large portions of CSX and NS tracks in Indiana are poised to be at LOS F by 2035 without improvements.

**Figure 3.22 Current Rail Level of Service 2007**

Source: *National Rail Freight Infrastructure Capacity and Investment Study*, prepared for Association of American Railroads, Cambridge Systematics, September 2007.

**Figure 3.23 Projected Rail Level of Service *without* Improvements  
2035**



Source: *National Rail Freight Infrastructure Capacity and Investment Study*, prepared for Association of American Railroads, Cambridge Systematics, September 2007.

### *Rail/Truck Intermodal Facilities*

In Indiana, major Class I intermodal facilities include those operated by CSX in Evansville and Avon, and the NS Fort Wayne Triple Crown facility. The Roanoke General Motors facility and the Hoosier Lift in Remington are also considered rail/truck intermodal facilities of statewide significance.<sup>1</sup>

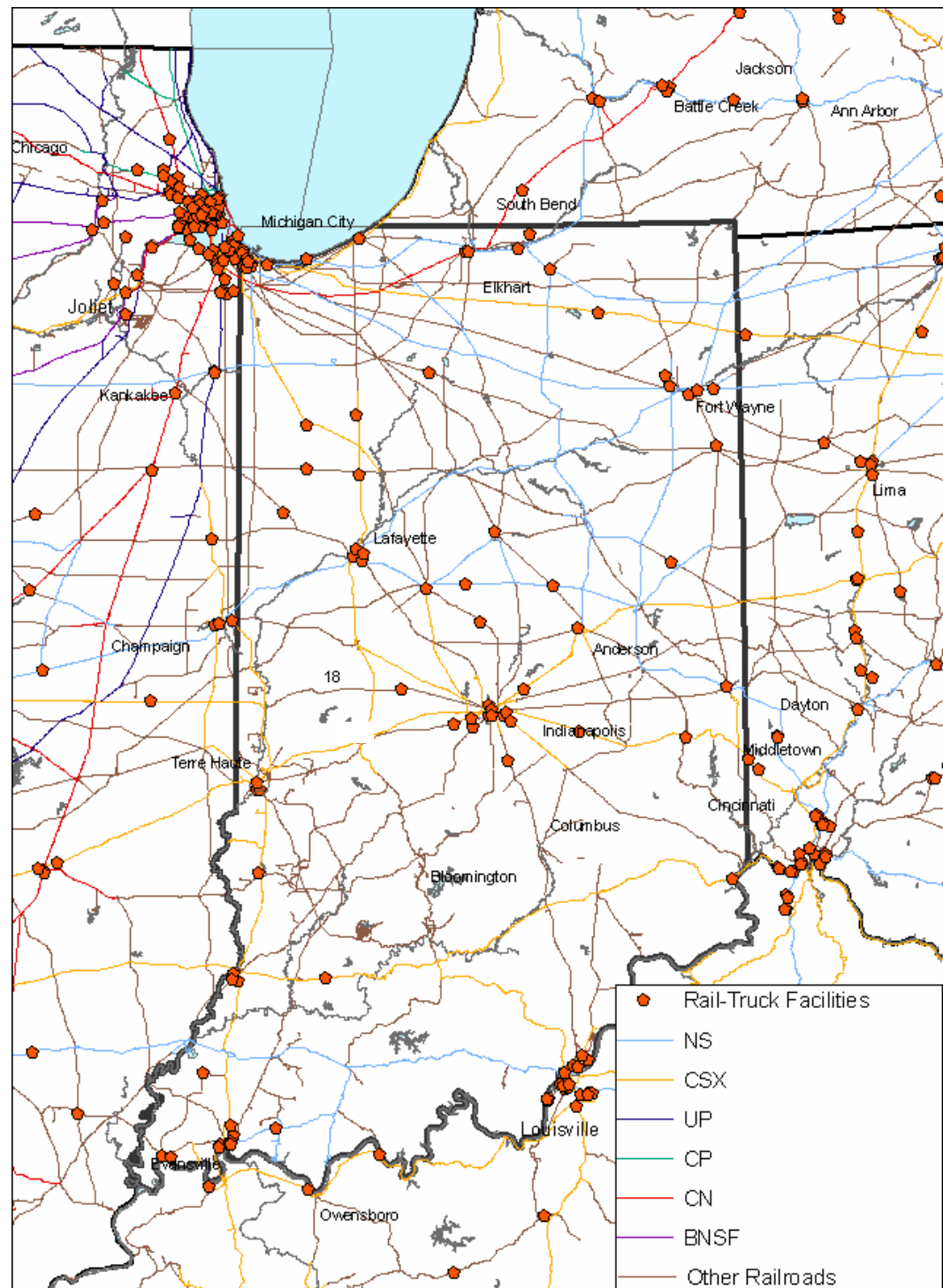
Other trailer-on-flatcar or container-on-flatcar (TOFC/COFC) intermodal terminals, bulk transload facilities, and vehicle ramps connect truck shipments with Class I and short-line railroads throughout the State. As shown in Figure 3.24, the largest concentration of intermodal facilities outside Indiana affecting the state is located in greater Chicago where six Class I railroads operate facilities. New mega-facilities have recently been built outside Chicago, such as the CenterPoint intermodal facility in Elwood, Illinois served by BNSF, with others being planned. Freight shipped by rail from the West coast often is transloaded in the Chicago region and transported to Indiana via truck, which is faster than transferring cargo to a different rail carrier for the short trip to Indiana. Other large concentrations of truck-rail intermodal facilities that affect Indiana and are

<sup>1</sup> Indiana DOT 2030 Long Range Transportation Plan.



used by shippers in the state include those in Cincinnati, Ohio (CSX and NS facilities) and Louisville, Kentucky (NS).

**Figure 3.24 Major Rail/Truck Intermodal Facilities Affecting Indiana**

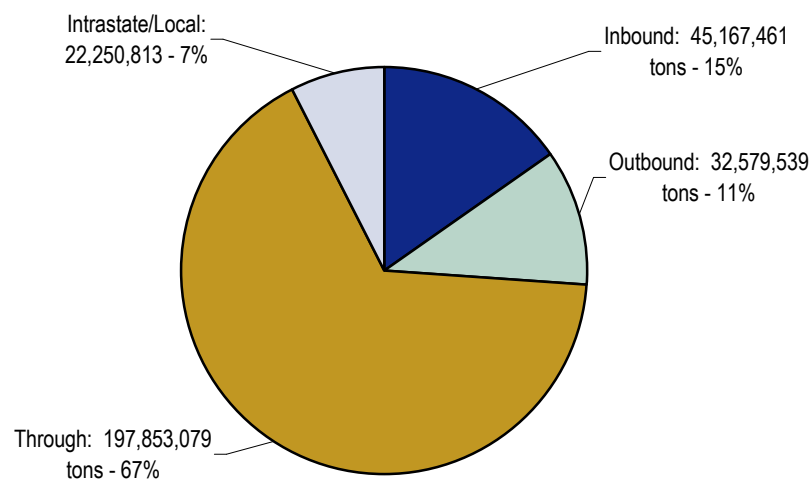


Major construction is underway on the “Heartland Corridor Project” to upgrade trackage between the Virginia ports and the new NS Rickenbacker Intermodal facility in Columbus, Ohio, allowing double-stacking of containers. The Rickenbacker facility will provide direct intermodal train service to and from Norfolk, Virginia and Chicago.

### Indiana 2005 Carload Waybill Sample Analysis

In 2005, Indiana’s freight railroads moved nearly 298 million tons of freight. As shown in Figure 3.25, the 2005 freight rail tonnage by direction included over 45 million inbound tons, over 32 million outbound tons, and over 22 million local tons. However, the largest portion of rail tonnage in the State, nearly 198 million tons, was through traffic.<sup>2</sup> This large portion of through tonnage can be attributed to the relatively low number of intermodal facilities in Indiana and the State’s proximity to major rail hubs in Illinois.

**Figure 3.25 Indiana Freight Rail Tonnage by Direction**  
2005



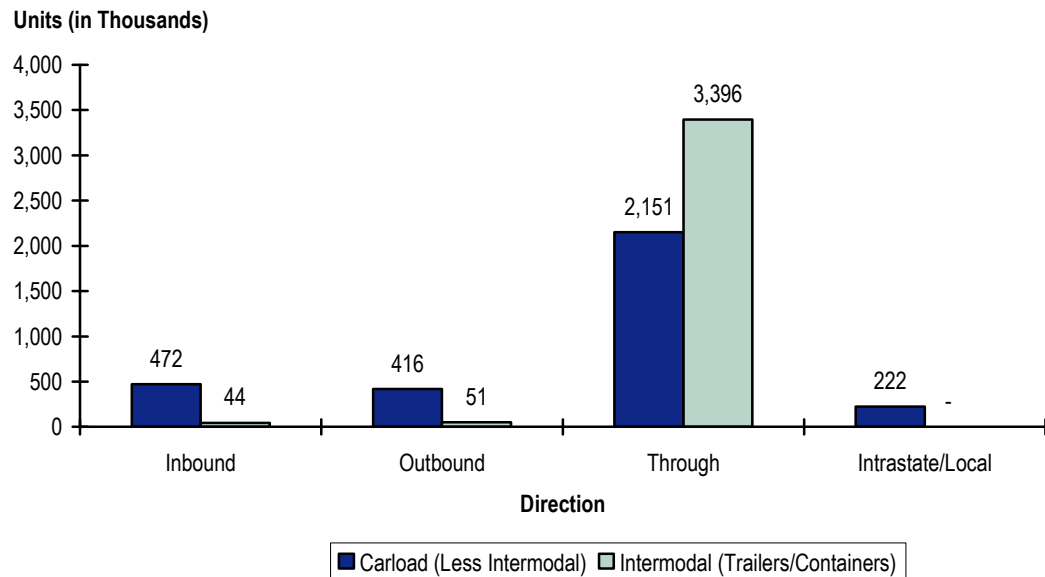
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<sup>2</sup> The terminology used in this report refers to “inbound” as interstate traffic terminating in Indiana; “outbound” as interstate traffic originating in Indiana; “local” as Indiana intrastate traffic; and “through” as traffic neither originating nor terminating in Indiana, but passing through the State. “Origins” include both *outbound and local* flows, while “terminations” include both *inbound and local* flows.



Indiana's 2005 tonnage was carried by approximately 3,261,089 carloads and 3,490,460 intermodal units (trailers and containers),<sup>3</sup> each representing a nearly 50 percent share of the traffic. Figure 3.26 illustrates the share of carload versus intermodal freight rail movements by direction, including inbound, outbound, intrastate/local, and through movements. As shown, the vast majority of total carload and intermodal traffic moved, over 5.5 million units or 82 percent, was through movements. Again, this large portion of through units can be attributed to the small number of intermodal facilities in Indiana, and to the State's proximity to major intermodal facilities in the Greater Chicago area.

**Figure 3.26 Indiana Rail Carload and Intermodal Movements by Direction**  
2005



Accordingly, in 2005, the greatest share of carload movements was through movements, accounting for 66 percent of all carloads. Inbound carload moves comprised 14 percent, outbound moves accounted for 13 percent, and local moves less than 7 percent of total carload movements. Similarly, the greatest share of intermodal movements was through movements. Over 97 percent of intermodal movements were through movements, although it is important to note that many of the intermodal shipments that travel to and from Indiana are carried to the Chicago area by truck, at which point they are transferred to rail cars. Many of these shipments may then pass through Indiana on trains, and would be categorized as through movements at that point. Intermodal traffic traveling into or out of the state by rail each accounted for less than 2 percent of

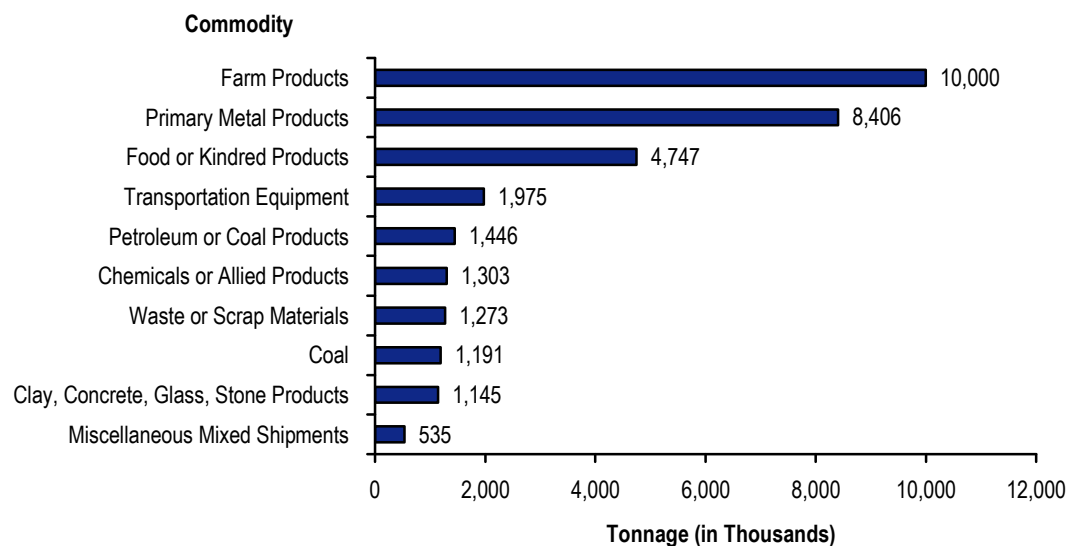
<sup>3</sup> The carload total figures exclude cars that haul intermodal units.

the total intermodal rail traffic. There were no local intermodal movements on record.

### *Outbound Rail Traffic by Commodity*

The top 10 outbound commodities by tonnage on rail from Indiana account for 98 percent of the more than 32 million total outbound tons. The leading outbound commodity is farm products with nearly 10 million tons and 31 percent of the outbound share (Figure 3.27). The second highest outbound commodity is primary metal products with 8.4 million tons and 26 percent of the outbound share. These two commodities alone account for 57 percent of all outbound commodities. The remaining top 10 outbound commodities include food or kindred products (15 percent), transportation equipment (6 percent), petroleum or coal products (4 percent), chemicals or allied products (4 percent), waste or scrap materials (4 percent), coal (4 percent), clay, concrete, glass, or stone products (4 percent), and miscellaneous mixed shipments (2 percent).

**Figure 3.27 Top 10 Outbound Indiana Commodities by Rail**  
2005

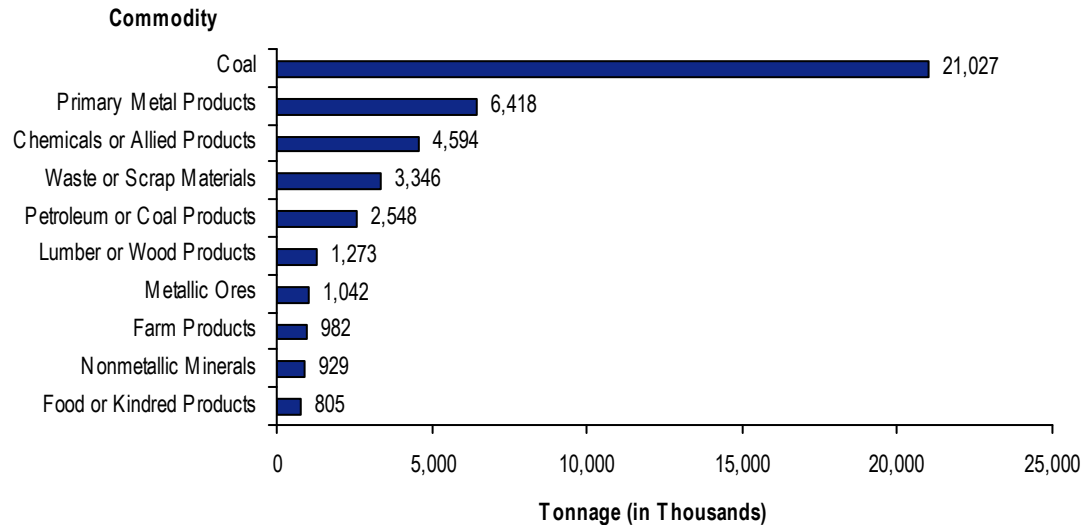


### *Inbound Rail Traffic by Commodity*

The top 10 inbound commodities by tonnage on rail into Indiana account for 95 percent of the total of over 45 million inbound tons. The leading inbound commodity is coal with over 21 million tons and 47 percent of the inbound share (Figure 3.28). The next highest inbound commodity, primary metal products, is a distant second with over six million tons and 14 percent of the inbound share. These two commodities alone account for 61 percent of all inbound commodities. The remaining top 10 inbound commodities include chemicals or allied products

(10 percent), waste or scrap materials (7 percent), petroleum or coal products (6 percent), lumber or wood products (3 percent), metallic ores (2 percent), farm products (2 percent), nonmetallic minerals (2 percent), and food and kindred products (2 percent).

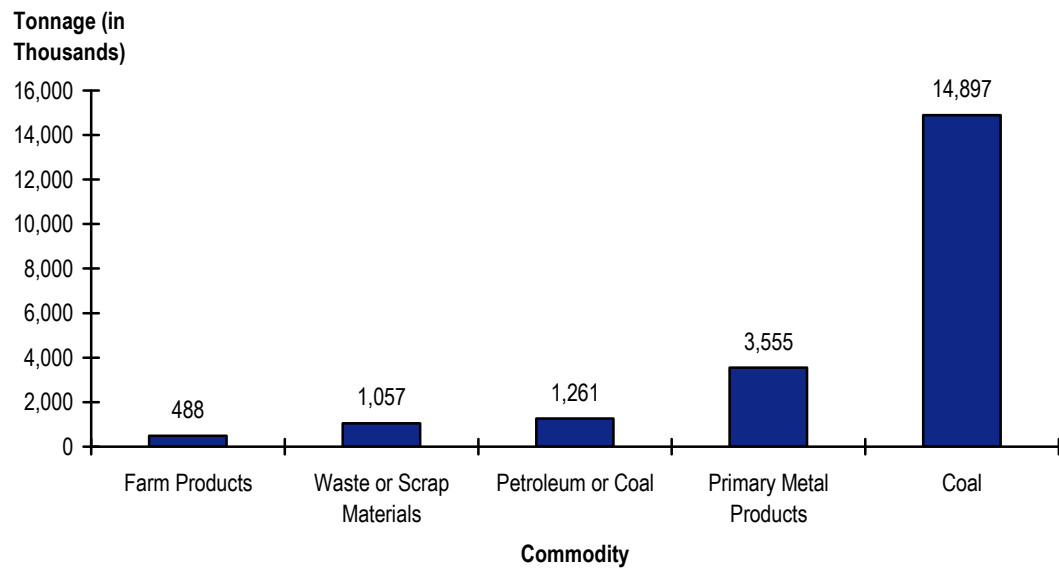
**Figure 3.28 Top 10 Inbound Indiana Commodities by Rail**  
2005



#### *Intrastate/Local Rail Traffic by Commodity*

Over 7 percent of Indiana rail freight tonnage is attributed to intrastate/local movements, and the top five intrastate/local commodities by tonnage account for 96 percent of the total intrastate/local tons. Figure 3.29 depicts the share of these top five intrastate/local commodities. The leading intrastate/local commodity is coal with nearly 15 million tons and 67 percent of the intrastate/local share. The next highest intrastate/local commodity, primary metal products, is a distant second with 3.6 million tons and 16 percent of the intrastate/local share. These two commodities account for 83 percent of all intrastate/local commodities. The remaining top five intrastate/local commodities include petroleum or coal products (6 percent), waste or scrap materials (5 percent), and farm products (2 percent).

**Figure 3.29 Top 5 Intrastate/Local Indiana Commodities by Rail**  
2005

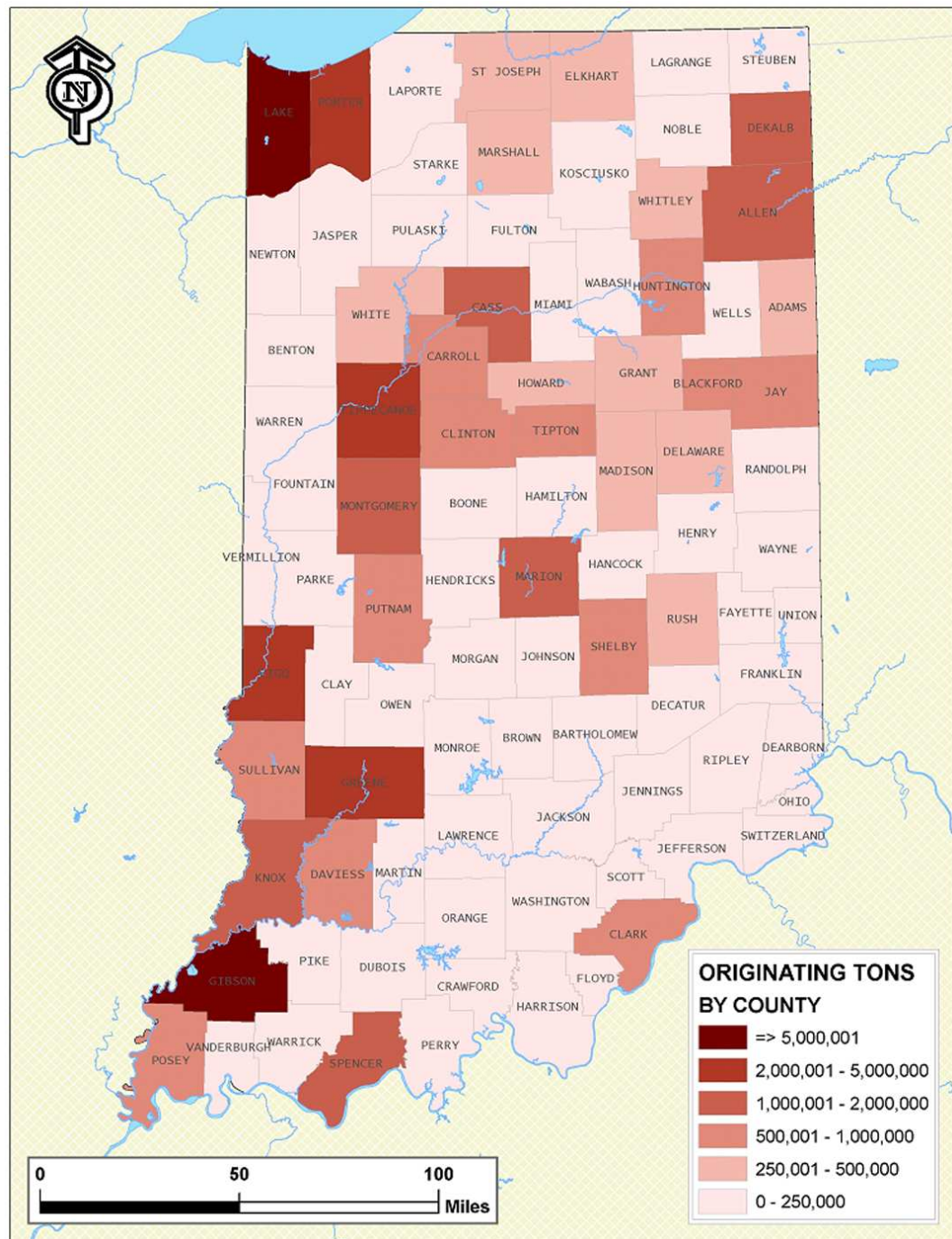


### *Rail Traffic Origins by Indiana County*

Figure 3.30 and Figure 3.31 depict the 2005 geographic distribution of the originating tonnage by each Indiana county, showing all traffic origins and intrastate traffic, respectively. As shown in Figure 3.32, both Gibson and Lake Counties lead all others with the most originating tonnage (greater than five million tons). Other counties that originated one million tons or more in 2005 included Vigo, Porter, Greene, Tippecanoe, Allen, Spencer, Marion, DeKalb, Knox, Montgomery and Cass.

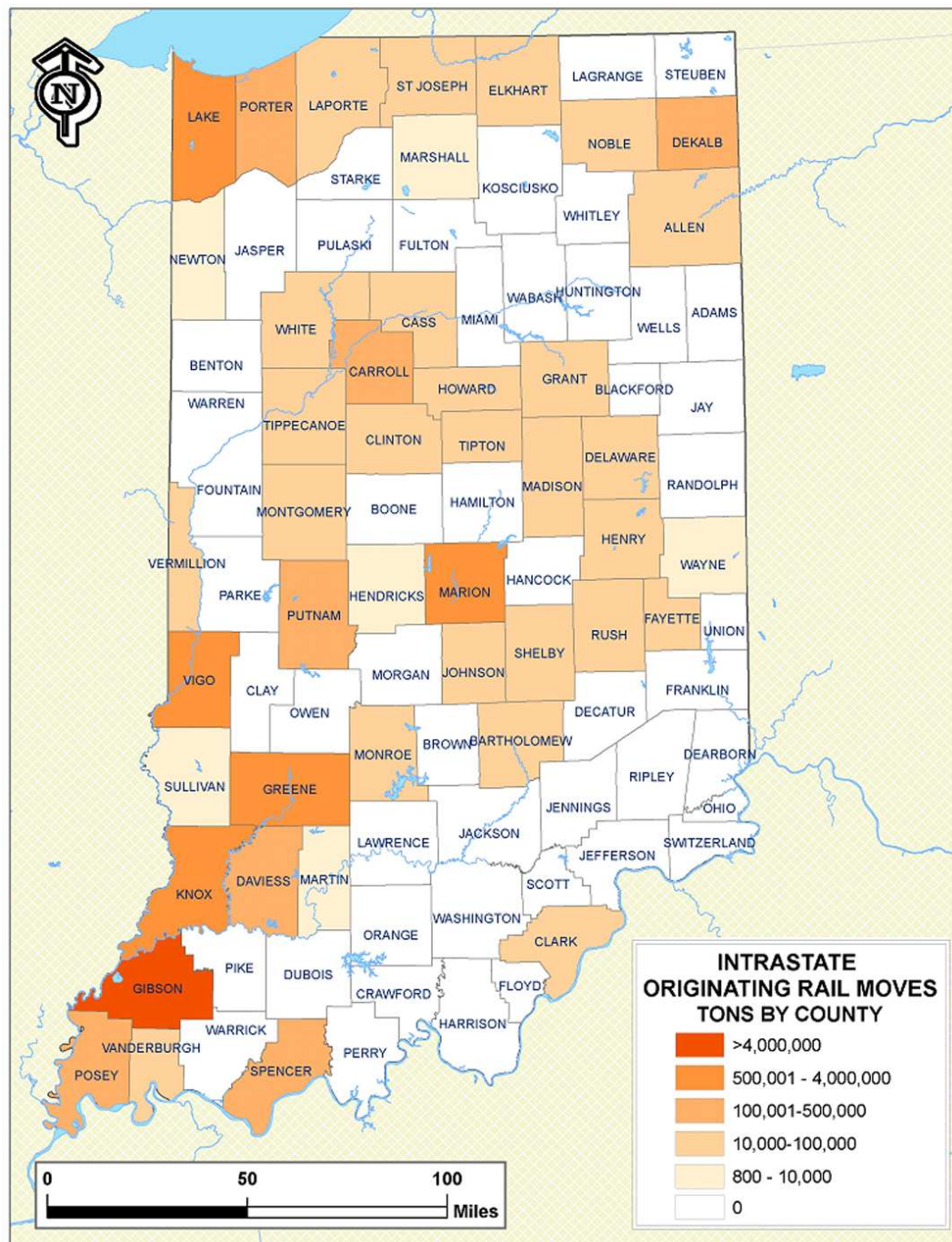
Figure 3.31 depicts intrastate county traffic origins (trips that both originate and terminate in Indiana). Gibson County is the leader for intrastate originating tonnage (greater than four Million tons). Other counties that originated 500,000 tons or more in 2005 included Vigo, Lake, Greene, Knox, and Marion.

**Figure 3.30 Indiana Total Rail Traffic Origins by County**  
2005





**Figure 3.31 Indiana Intrastate Rail Traffic Origins by County**  
2005

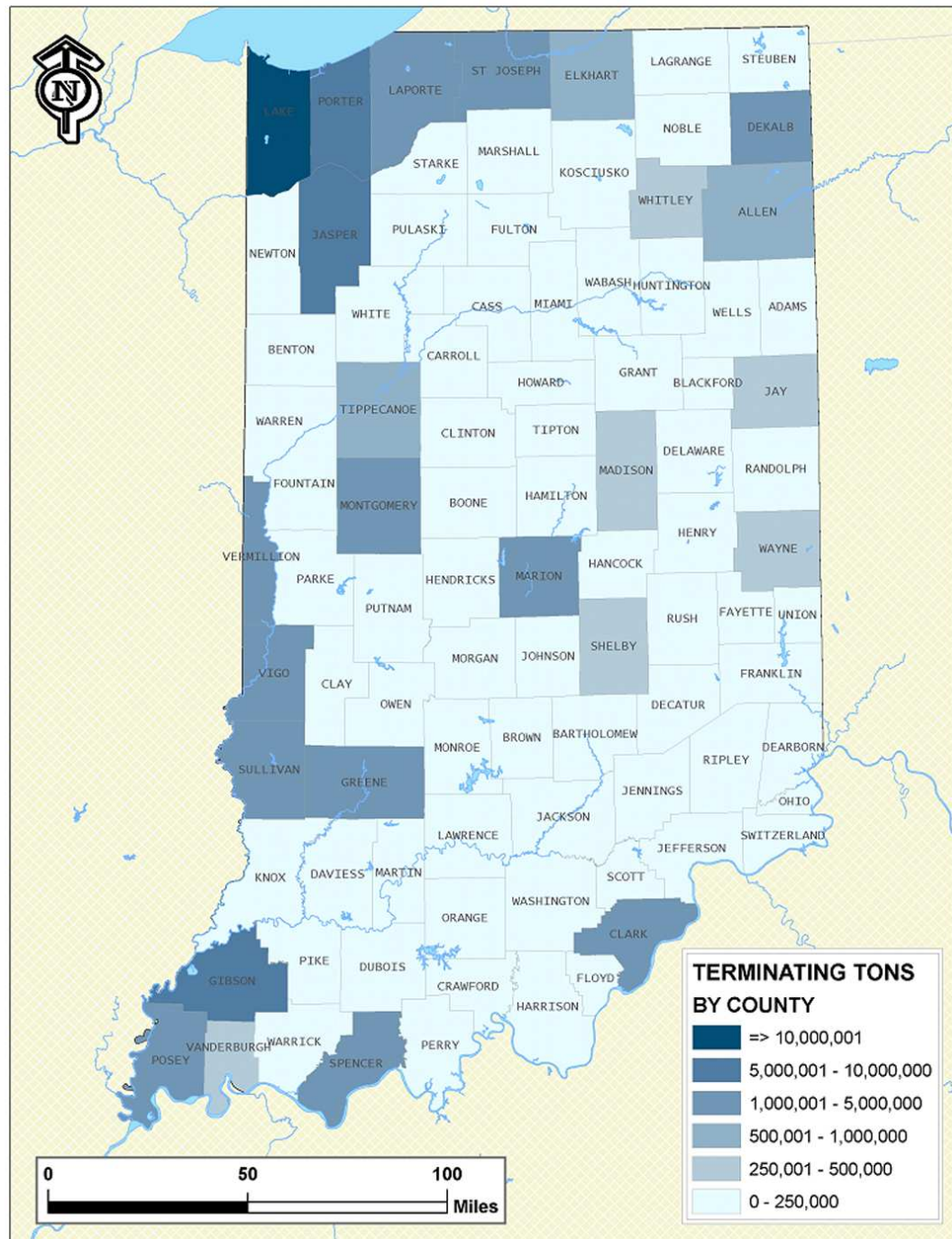


### *Rail Traffic Destinations by Indiana County*

Figure 3.32 and Figure 3.33 depict the 2005 geographic distribution of the terminating tonnage by each Indiana county, showing all traffic destinations and intrastate traffic, respectively. As shown in Figure 3.32, both Lake and Gibson Counties lead all others with the most terminating tonnage (greater than 10 million tons). Other counties where one million tons or more were destined included: Porter, Jasper, Marion, Vigo, Posey, St. Joseph, DeKalb, Spencer, Vermillion, Montgomery, Sullivan, LaPorte, Greene, and Clark Counties.

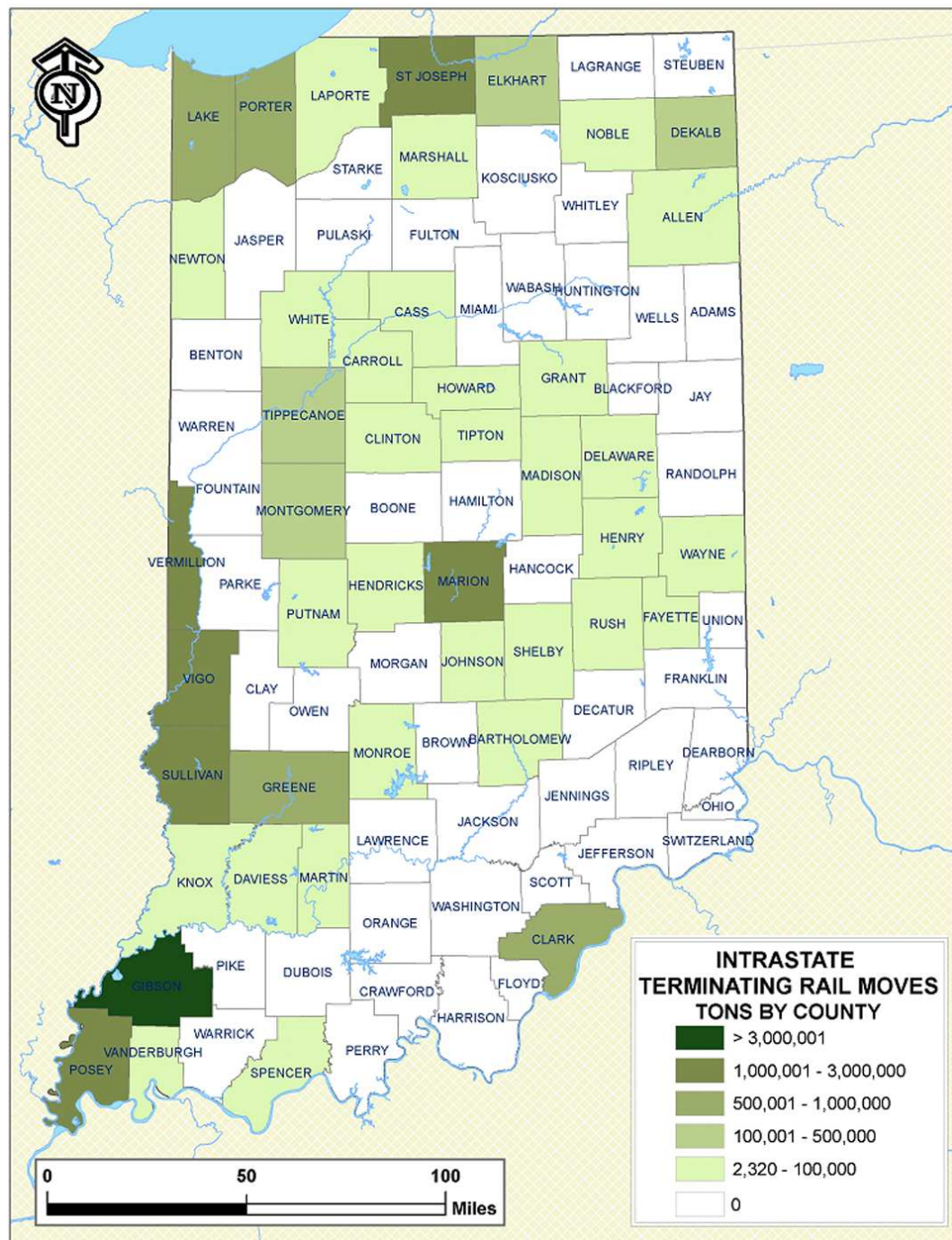
Figure 3.33 depicts intrastate county traffic destinations (trips that both originate and terminate in Indiana). As shown, Gibson County is the leader for intrastate terminating tonnage (greater than three million tons). Gibson County is the site of a major coal power plant, requiring large amounts of coal shipped by rail, as well as a Toyota plant. Other counties that served as the destination for 500,000 tons or more in 2005 included Vigo, Vermillion, St. Joseph, Posey, Sullivan, Marion, Greene, Porter, Lake and Clark.

**Figure 3.32 Indiana Total Rail Traffic Terminations by County**  
2005





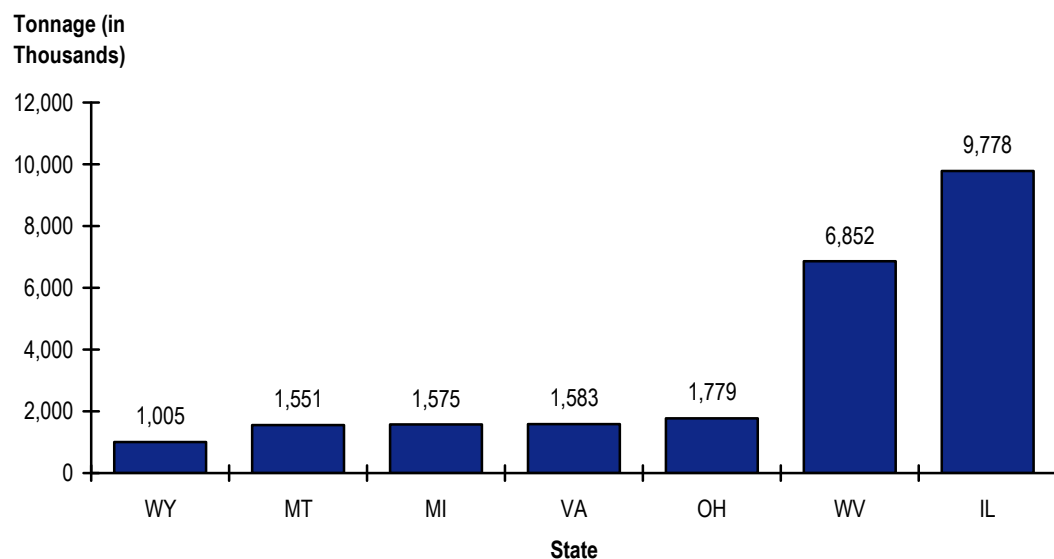
**Figure 3.33 Indiana Intrastate Rail Traffic Terminations by County**  
2005



### *Inbound Rail Traffic by Trading Partner*

Figure 3.34 shows the top origin states whose freight shipments to Indiana by rail exceeded one million tons in 2005. These states accounted for 48 percent of the total inbound tonnage that Indiana received in that year. Illinois ranked first with 9.8 million tons destined for Indiana, with coal (7.0 million tons), chemicals or allied products (611,000 tons), and farm products (555,000 tons) as its top three commodities. Many of these products likely were not produced or mined in Illinois. However, Chicago is the nation's major east-west rail hub, with coal and other products from the west being shipped to Chicago, transferred to other railways' trains, and continuing on to end their journey in Indiana. The Waybill dataset reports the first leg of the trip as having a destination in Illinois, and the final leg is reported separately as having an Illinois origin and Indiana destination. The dataset does not link the two segments.

**Figure 3.34 Inbound Indiana Rail Tonnage by Origin State  
2005**



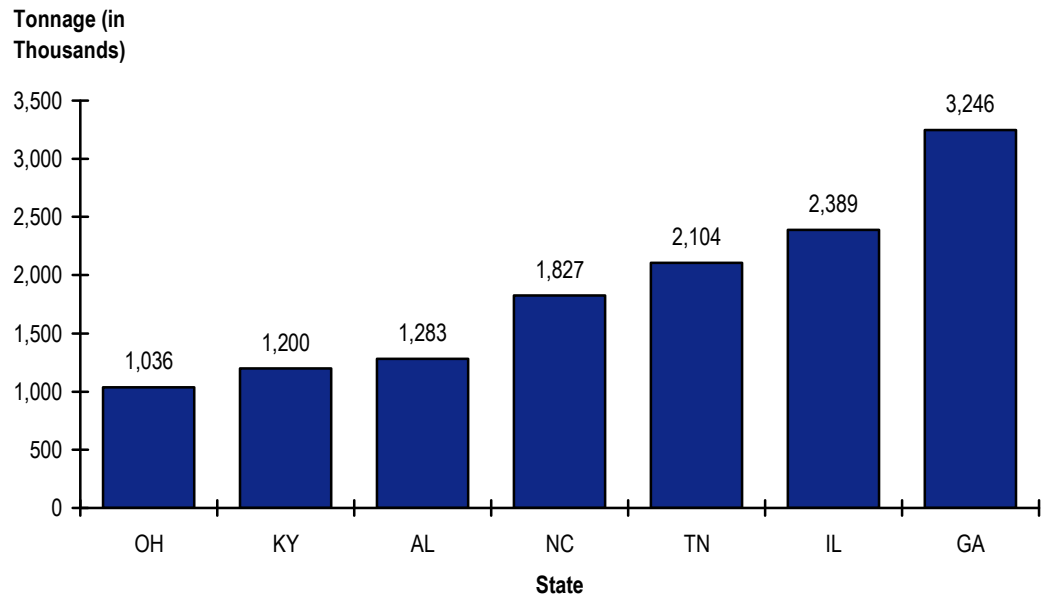
West Virginia ranked second with a total of 6.9 million tons shipped to Indiana, with coal accounting for 98 percent of the shipments. Next highest was Ohio with 1.8 million tons, comprised of coal (550,000 tons), primary metal products (292,000 tons), and waste or scrap materials (273 tons). The remaining five states – Ohio, Virginia, Michigan, Montana, and Wyoming – shipped between 1.0 million and 1.8 million tons each to Indiana.

### *Outbound Rail Traffic by Trading Partner*

Figure 3.35 shows the top receiving states for Indiana's outbound rail traffic which exceeded one million tons in 2005. These states accounted for 34 percent

of the total outbound tonnage in that year. Georgia and Illinois were Indiana's top receiving states with 3.2 and 2.4 million tons, respectively. Georgia's top shipment, coal (2.8 million tons), accounted for 85 percent of terminating rail tonnage from Indiana; food and kindred products was second (244,000 tons).

**Figure 3.35 Outbound Indiana Rail Tonnage by Termination State**



The top three shipments to Illinois included coal (1.2 million tons), primary metal products (423,000 tons), and food or kindred products (319,000 tons). Similar to inbound shipments, it's likely that many of these products were transferred to different trains in Chicago and continued their journey elsewhere in the country. Tennessee received 2.1 million tons with top three shipments of coal (1.5 million tons), food and kindred products (224,000 tons), and primary metal products (155,000 tons). The remaining four States –North Carolina, Alabama, Kentucky, and Ohio – each received between 1.0 million and 1.8 million tons from Indiana.

### Coal Transportation Study

The 2007 Purdue University study, "A Prescriptive Analysis of the Indiana Coal Transportation Infrastructure," highlighted the important relationship between coal extraction, coal-burning power plants, and transportation infrastructure in Indiana. As of 2005, approximately 40 percent of the nearly 50 million short tons of coal consumed in Indiana came from sources within the State, while nearly

85 percent of the coal extracted in Indiana was consumed in-state.<sup>4</sup> The study found that the State of Indiana has the potential to produce significantly more coal than is currently extracted, which would result in reduced imports from other states and, potentially, an increase in Indiana coal exports. The limiting factor, according to the study, is transportation infrastructure. Indeed, many coal-fired power stations in northern Indiana currently import their coal from other states because doing so is less expensive than transporting from the coal fields in southwestern Indiana. According to the study, rail connectivity is poor between coal fields in southwestern Indiana and the areas of greatest demand, in central and northwestern Indiana. Furthermore, many power plants and mines are primarily served by short-line or regional railroads, further increasing transportation costs and contributing to the “last mile problem.” Indiana lags behind the national average in the share of coal that travels to power plants by rail (70 percent versus 85 percent nationally), and this problem is likely to worsen as coal competes with other, more profitable commodities, for service on a capacity-constrained rail network.

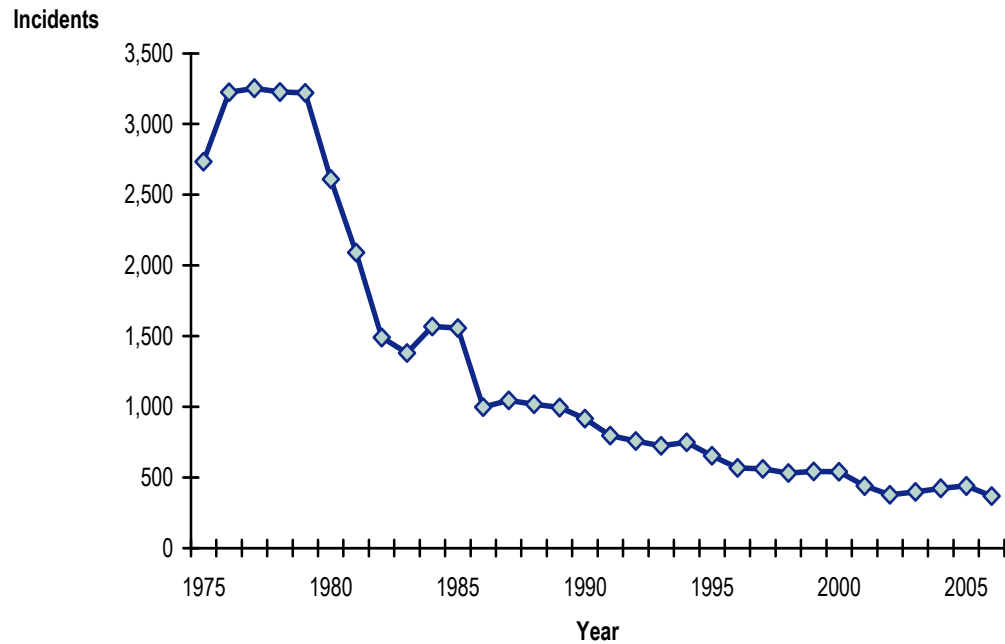
### **Rail-Related Accidents and Incidents**

The Federal Railroad Administration (FRA) maintains records of all railroad-related accidents and incidents. In 2006 there were 368 such incidents in Indiana, down from 439 in 2005 and the lowest number since at least 1975 (the first year for which FRA data were available). There were 23 total fatalities resulting from those incidents, down from 36 in 2005 and also the lowest since 1975. Figure 3.36 and Figure 3.37 show the trends in rail-related incidents and fatalities in Indiana since 1975.

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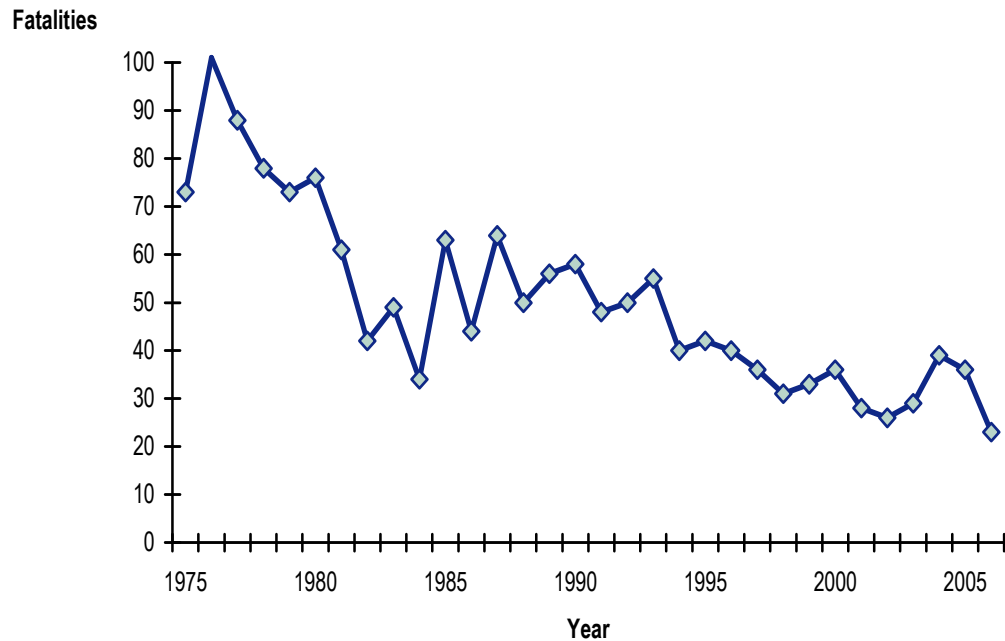
<sup>4</sup> Source: Energy Information Administration, U.S. Department of Energy.

**Figure 3.36 Rail-Related Incidents in Indiana**  
1975 to 2006



Source: Federal Railroad Administration, Office of Safety Analysis

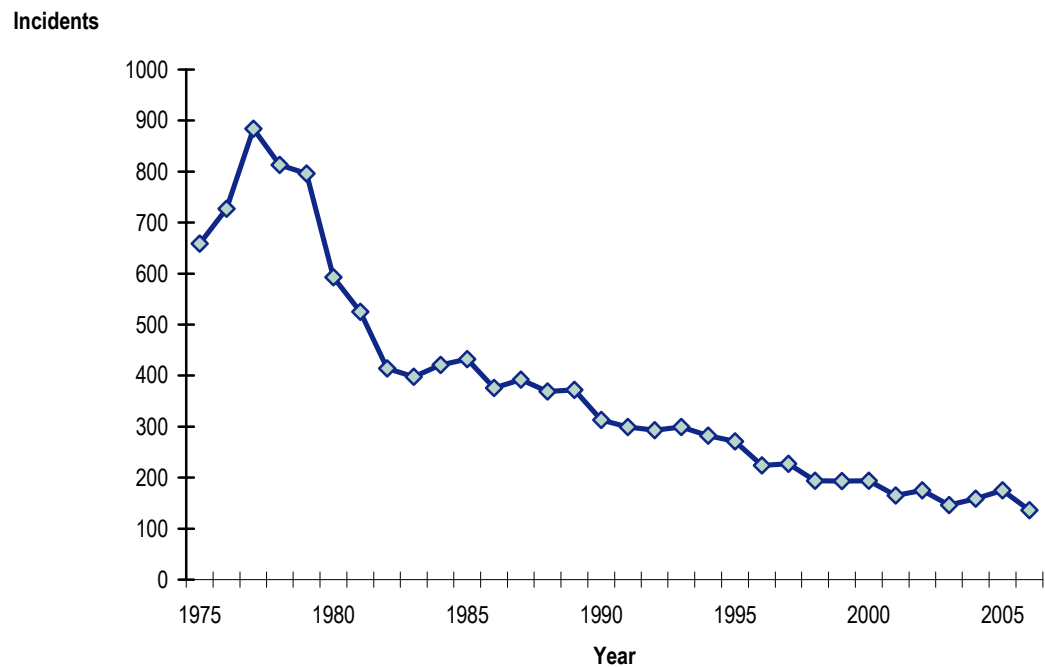
**Figure 3.37 Fatalities Resulting from Indiana Rail Incidents**  
1975 to 2006



Source: Federal Railroad Administration, Office of Safety Analysis

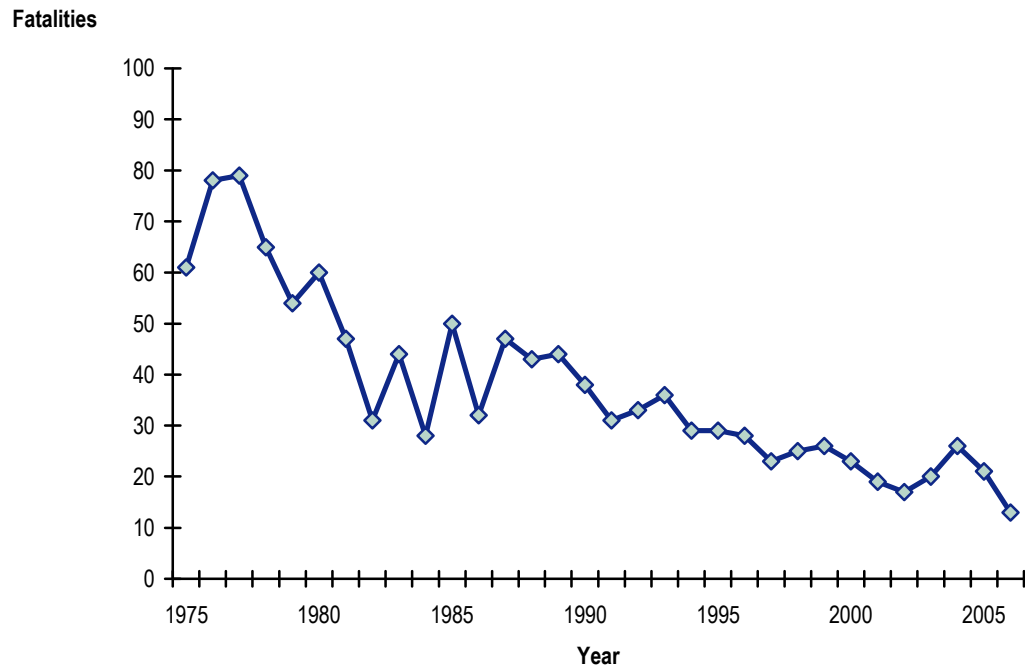
While the preceding two figures include highway-rail grade crossing incidents (including collisions) in addition to all other rail-related incidents, FRA also maintains a separate database that isolates only those at highway-rail grade crossings. In 2006 there were 136 such incidents in Indiana, down from 175 in 2005 and the lowest number since at least 1975. There were 13 total fatalities resulting from highway-rail grade crossing incidents in 2006, down from 21 in 2005 and also the lowest since 1975. Of the 12 fatal highway-rail grade crossing collisions in 2006, all but two occurred at crossings that did not have active warning devices. Figure 3.38 and Figure 3.39 show the trends in incidents and fatalities at highway grade crossings in Indiana since 1975.

**Figure 3.38 Incidents at Indiana Highway-Rail Grade Crossings**  
1975 to 2006



Source: Federal Railroad Administration, Office of Safety Analysis

**Figure 3.39 Fatalities Resulting from Highway-Rail Grade Crossing Collisions in Indiana**  
1975 to 2006



Source: Federal Railroad Administration, Office of Safety Analysis

### Rail System Performance Summary

Due to recent increases in tonnage moved by rail, excess capacity in the national rail network is quickly being consumed. In 2007, few rail segments were considered to be near or at capacity (Figure 3.40). Rail lines converging on the Chicago area in Northwest Indiana were at capacity, though the recent merger of the CN and EJ&E could help to relieve some portion of this bottleneck. The CSX line in Evansville and the NS line leaving the state into Champaign, Illinois, were approaching capacity. In 2035, however, assuming no new major added capacity or changes after 2007, most of Indiana's major interstate rail lines are expected to be operating at or above capacity.

Access to major rail yards and rail/truck intermodal facilities is critical for the viability of intermodal transport in Indiana. Highway access roads to the NS Triple Crown facility in Fort Wayne and the Avon CSX facility in Indianapolis were designated as National Highway System (NHS) intermodal freight connectors of national significance.<sup>5</sup> Access roads to the Triple Crown facility,

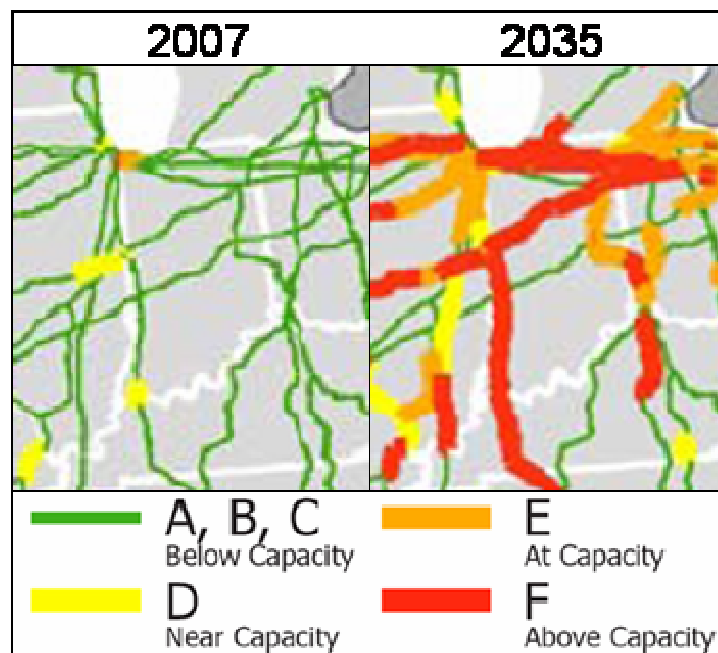
<sup>5</sup> NHS Intermodal Freight Connectors: Report to Congress, U.S. DOT, 2000.

including Pontiac Street and Wayne Trace, are currently operating at LOS A and B, with similar conditions predicted in 2030, according to output from the ISTDM. U.S. 36, however, which connects the Avon CSX facility with I-465/I-74 in Indianapolis, is operating between LOS B and F along different segments, with slightly more congested segments expected in 2030.

The Roanoke General Motors facility, an intermodal rail/truck facility of state-wide significance, can be accessed by Lower Huntington Road and Lafayette Center Road. These roads are operating between LOS A and B and are expected to have similar conditions in the future, while nearby I-69 will experience more congested conditions in the future at LOS C. U.S. 24/U.S. 231 connects the Hoosier Lift in Remington to nearby I-65 and is currently operating at LOS C. In 2030 both U.S. 24/U.S. 231 and I-65 are expected to function at LOS C.

Rail-related safety performance continues to improve. The trends in the “Rail-Related Accidents and Incidents” section indicate a steady and continuing decrease in all rail-related incidents and fatalities in Indiana.

**Figure 3.40 Indiana Rail Network Level of Service (2007 and 2035)**



Source: *National Rail Freight Infrastructure Capacity and Investment Study*, prepared for Association of American Railroads, Cambridge Systematics, September 2007.

### Planned Infrastructure Investments

INDOT administers the Industrial Rail Service Fund, which provides grants for freight rail infrastructure improvement projects to Class II and III railroads and Port Authorities to maintain and increase rail shipping levels. During FY 2007, grants totaling \$1.9 million were awarded. In FY 2008, \$1.3 million was awarded



(in grants of up to \$350,000 each) to six shortline railroads that will be making improvements:

- Louisville and Indiana Railroad (Johnson County);
- Indiana Railroad company (Vigo County);
- Hoosier Southern Railroad (Perry County);
- Chesapeake and Indiana (Starke County);
- Winamac Southern (Howard County); and
- Bee Line Railroad (Warren and Benton Counties).

As part of CN's purchase of the EJ&E, it has proposed \$100 million in improvements including three new rail connections in Indiana at Griffith, Ivanhoe and Kirk Yard in Gary.<sup>6</sup> CN proposes to relocate rail car sorting and train development activities to Kirk Yard and add three inbound and three outbound switch trains. An Environmental Impact Statement (EIS) was recently completed.

Two rail improvement projects were included in the Northwest Indiana Regional Planning Commission's (NIRPC) FY 2008 to 2011 TIP: relocation of freight rail lines in the vicinity of the Gary/Chicago Airport for eventual runway extension, and the Rail Traffic Relocation Project in Gary.

The Northeastern Indiana Regional Coordinating Council (NIRCC) lists the following rail improvements in its financially constrained 2030 Transportation Plan:

- Railroad grade separation of Anthony Boulevard and NS line;
- Railroad grade separation of Airport Expressway and NS line;
- Railroad grade separation of Baer Field Thruway and NS line;
- Reconstruction of railroad grade separation at Anthony Boulevard and CSX line; and
- Reconstruction of railroad grade separation at U.S. 27/Lafayette Street and NS/CSX lines.

According to the Michiana Area Council of Governments (MACOG) FY 2008-2012 TIP, in Elkhart a grade separation project at Prairie Avenue and Norfolk Southern Railroad is planned, and improvements to rail-highway grade crossings will be made.

Indiana has more than 6,000 public rail-highway crossings, which is the fifth highest in the nation, according to INDOT. As shown in Table 3.2, more than half of the rail crossings in Indiana have active warning devices, which is higher than the national average. Federal Rail-Highway Crossing Program (Section 130)

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<sup>6</sup> Federal Register, April 28, 2008, Pages 22,994-23,003.

funding enables safety improvements at approximately 30 to 35 Indiana crossings per year.

**Table 3.2 Indiana Highway-Rail Grade Crossing Inventory**

Warning Devices	Number	Percent of Total
Flashing Lights and Gates	1,794	29.7
Flashing Lights Only	1,366	22.6
Other	168	2.8
Stop Signs Plus Crossbucks	982	16.3

Source: <http://www.in.gov/indot/7103.htm>.

## 3.4 AIR

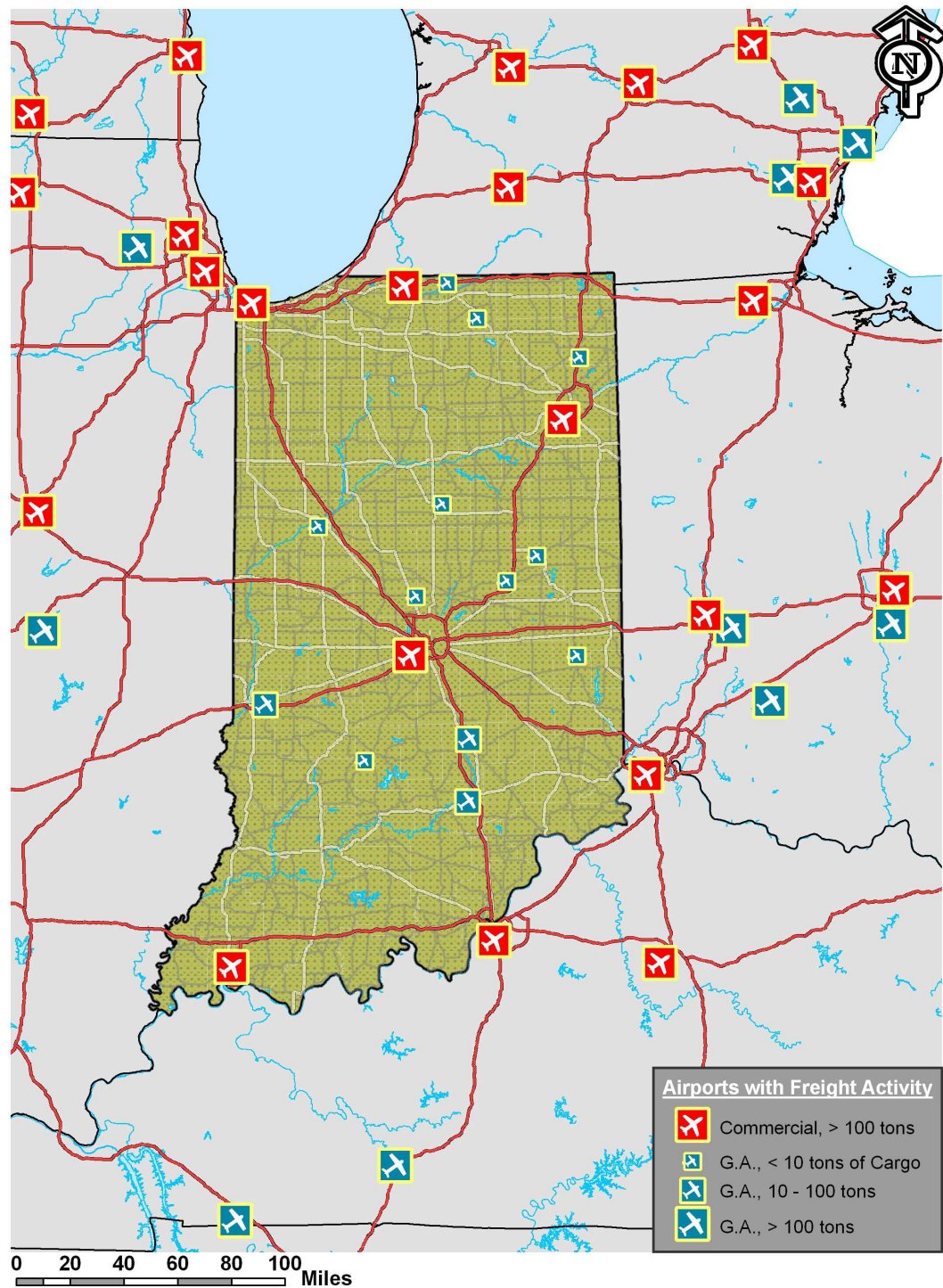
### Air Cargo Volumes and Airport Capacity

According to the INDOT 2030 Long-Range Transportation Plan, air freight represented “less than 0.1 percent of the State’s [freight] traffic by weight, but nearly 8 percent by value” in 1998. This statistic represents the typical market for air freight, which primarily transports goods that are lighter weight, less bulky, higher value, and more time-sensitive. An example of this is the biotechnology industry, a major user of air freight services.

In Indiana 18 airports each handled at least one ton of air cargo in 2006, and five of these had 2006 volumes of 100 tons or greater: Indianapolis, Fort Wayne, South Bend, Evansville, and Gary (Figure 3.41).<sup>7</sup>

<sup>7</sup> Source: Bureau of Transportation Statistics.

**Figure 3.41 Commercial and General Aviation Airports with Freight Activity in 2005 or 2006**



Source: Bureau of Transportation Statistics.

Note: Outside of Indiana, only airports with greater than 100 tons of cargo movements are shown.

Table 3.3 displays 2006 and 2007 freight data for 18 Indiana airports, as well as nearby major airports outside of Indiana. Indianapolis International Airport is by far the most significant airport in Indiana for air freight, handling over 1 million tons of combined inbound and outbound freight in 2007. A high concentration of air cargo activity in close proximity to Indianapolis, and the world's second largest FedEx facility at that airport, have contributed to Indianapolis' ranking among top U.S. airports for freight. As of 2007 FedEx operated 76 gates and occupied over 500 acres at the airport, employing around 5,000 people, with continued plans for expansion. Integrated express carriers FedEx and UPS have determined that centralized locations such as Memphis, Louisville, and Indianapolis are prime sites for streamlining operations in the U.S. and internationally.

**Table 3.3 2006 to 2007 Air Cargo Summary Data: Indiana Airports Compared to Top U.S. Freight Airports**

Summary Freight Data (Tons Emplaned, Originating and Terminating)				
	2007	2006	Percent Change	2007 Rank
<i>Memphis (MEM)</i>	<i>3.98 million</i>	<i>3.84 million</i>	<i>3.7%</i>	<i>1</i>
<i>Louisville International (SDF)</i>	<i>2.21 million</i>	<i>2.16 million</i>	<i>2.8%</i>	<i>2</i>
<i>Chicago O'Hare (ORD)</i>	<i>1.78 million</i>	<i>1.74 million</i>	<i>2.2%</i>	<i>5</i>
<b>Indianapolis (IND)</b>	<b>1.10 million</b>	<b>1.08 million</b>	<b>2.1%</b>	<b>8</b>
<i>Wilmington, OH (ILN)</i>	<i>805 thousand</i>	<i>836 thousand</i>	<i>-3.6%</i>	<i>12</i>
<b>Fort Wayne (FWA)</b>	<b>92.1 thousand</b>	<b>151 thousand</b>	<b>-38.9%</b>	<b>79</b>
<i>Cincinnati (CVG)</i>	<i>49.8 thousand</i>	<i>55.8 thousand</i>	<i>-11.0%</i>	<i>115</i>
<b>South Bend (SBN)</b>	<b>12.9 thousand</b>	<b>12.6 thousand</b>	<b>2.2%</b>	<b>208</b>
<i>Evansville (EVV)</i>	<i>208</i>	<i>392</i>	<i>-47.0%</i>	<i>625</i>
<i>Gary (GYV)</i>	<i>190</i>	<i>100</i>	<i>89.6%</i>	<i>648</i>
<i>Terre Haute (HUF)</i>	<i>184</i>	<i>20</i>	<i>832.2%</i>	<i>655</i>
<i>Columbus (CLU)</i>	<i>110</i>	<i>64</i>	<i>72.9%</i>	<i>763</i>
<i>Lafayette (LAF)</i>	<i>46</i>	<i>6</i>	<i>708.9%</i>	<i>882</i>
<i>Goshen (GSH)</i>	<i>26</i>	<i>5</i>	<i>388.9%</i>	<i>968</i>
<i>Delaware County (MIE)</i>	<i>13</i>	<i>4</i>	<i>221.3%</i>	<i>1,062</i>
<i>Anderson (AID)</i>	<i>5</i>	<i>7</i>	<i>-23.2%</i>	<i>1,155</i>
<i>Elkhart (EKL)</i>	<i>5</i>	<i>9</i>	<i>-49.6%</i>	<i>1,159</i>
<i>Kokomo (OKK)</i>	<i>5</i>	<i>7</i>	<i>-35.7%</i>	<i>1,160</i>
<i>Seymour (SER)</i>	<i>3</i>	<i>13</i>	<i>-78.3%</i>	<i>1,212</i>
<i>Connersville (CEV)</i>	<i>1</i>	<i>8</i>	<i>-85.5%</i>	<i>1,301</i>
<i>Bloomington (BMG)</i>	<i>0</i>	<i>7</i>	<i>-100%</i>	<i>N/A</i>
<i>Indianapolis Executive (IN2)</i>	<i>0</i>	<i>3</i>	<i>-100%</i>	<i>N/A</i>
<i>Auburn (IN1)</i>		<i>3</i>	<i>-100%</i>	<i>N/A</i>

Source: Bureau of Transportation Statistics ([http://www.transtats.bts.gov/Fields.asp?Table\\_ID=292](http://www.transtats.bts.gov/Fields.asp?Table_ID=292)).

Airport capacity can be measured in a number of ways, and is dependent on multiple factors, including runway dimensions, the number and layout of runways, and the mix of aircraft types. Table 3.4 shows the number of runways and the length of the longest runway at the five airports in Indiana that handled at least 100 tons of cargo in 2007.

**Table 3.4 Runways at Indiana's Top Five Cargo Airports**

Airport	Number of Runways	Length of Longest Runway
Indianapolis (IND)	3	11,200 feet
Fort Wayne (FWA)	3	11,981 feet
South Bend (SBN)	3	8,414 feet
Evansville (EVV)	3	8,021 feet
Gary (GY)	2	7,003 feet
Terre Haute (HUF)	3	9,020 feet
Columbus (CLU)	2	6,400 feet

Source: [www.airnav.com](http://www.airnav.com).

Note: The main runway (12/30) at Gary is planned for extension pending an agreement to relocate freight railroad tracks near the runway's west end.

From a logistics perspective, available space for cargo handling at an airport and accessibility by multiple modes are also critical factors. Indianapolis International Airport has over two million square feet of warehouse space on site (Table 3.5). All three of the top cargo airports in Indiana are adjacent to rail and interstate highway facilities. Both Indianapolis and Fort Wayne International Airports are considered freight intermodal facilities of national significance.<sup>8</sup>

**Table 3.5 Freight Facilities and Accessibility at Indiana's Top Three Cargo Airports**

Airport	Total Carriers (All Cargo)	Ramp/Tarmac Surface for Cargo (Occupancy %)	Warehouse Space (Occupancy %)	Distance to Connecting Transport (miles)
Indianapolis (IND)	15 (2)	Not Available	2 million square feet (95%)	<ul style="list-style-type: none"> <li>• Rail &lt;1</li> <li>• Interstate &lt;1</li> <li>• Port 60</li> </ul>
Fort Wayne (FWA)	10 (2)	30 acres (-)	250,000 square feet (100%)	<ul style="list-style-type: none"> <li>• Rail 0</li> <li>• Interstate 1</li> <li>• Port 75</li> </ul>
South Bend (SBN)	10 (4)	>600 square feet (100%)	Not Available	<ul style="list-style-type: none"> <li>• Rail 2</li> <li>• Interstate &lt;1</li> <li>• Port 37</li> </ul>

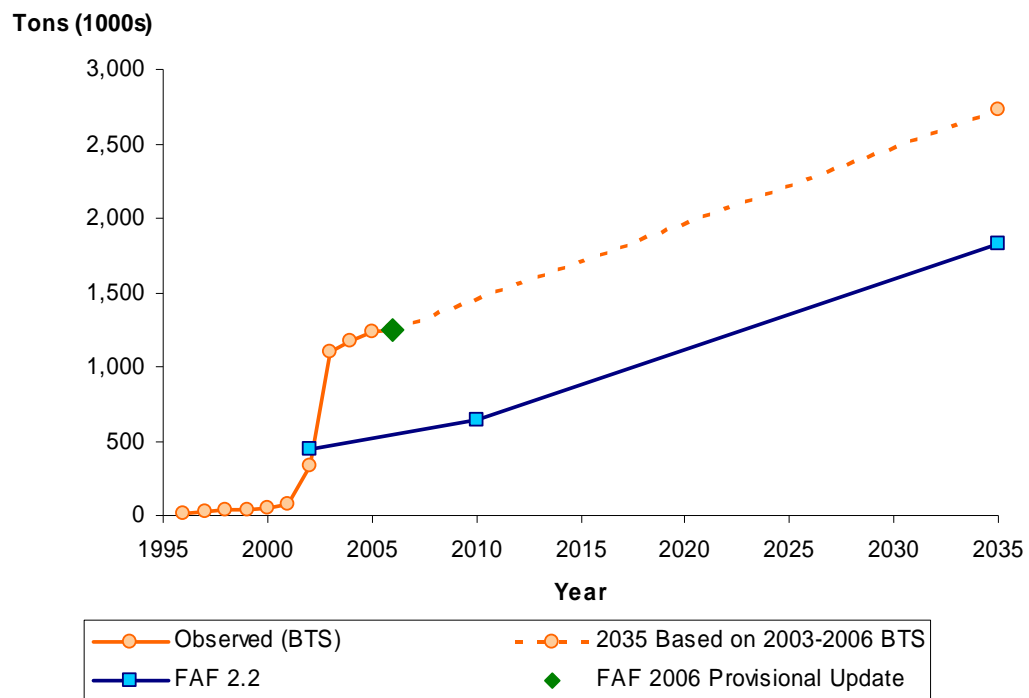
Source: Air Cargo World, 2007.

<sup>8</sup> Indiana DOT 2030 Long Range Transportation Plan.

## Air Cargo Forecasts

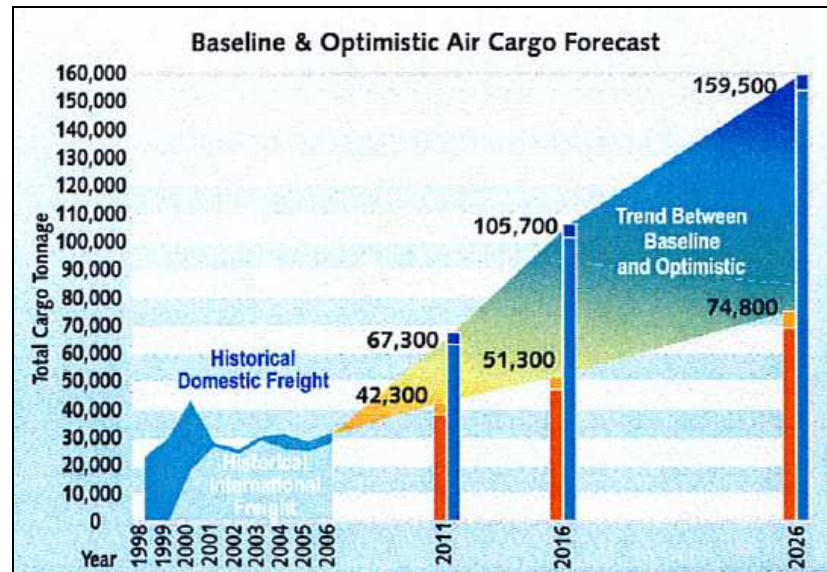
Cited in Section 3.1 of this report, FAF2 projects freight volumes by mode through 2035. However, these forecasts are based on 2002 data, and trends since 2002 indicate that the forecasts for Indiana may be considerably low. In just one year, between 2002 and 2003, air cargo tonnages moving into, out of, or within Indiana more than tripled, from 335,000 tons in 2002 to 1.1 million tons in 2003. FAF's "Provisional Estimate" of goods movement in 2006 confirms that by that year Indiana's freight tonnage was already twice the originally predicted 2010 value. A simple linear projection of Bureau of Transportation Statistics (BTS) air freight data from 2003 through 2006, a period of more stable growth, suggests that 2035 tonnages might be expected to reach as high as 2.7 million tons, far greater than the 1.8 million predicted in FAF2. Figure 3.42 shows annual BTS data from 1995 through 2006 and a linear projection to 2035, comparing these values with FAF2 figures for 2002, 2010, and 2035, as well as the FAF 2006 provisional estimate.

**Figure 3.42 FAF2 Air Cargo Data Compared with BTS Air Cargo Data**  
1995 – 2035



Although projected increases in FedEx freight volumes through Indianapolis are proprietary and therefore unavailable for this report, Figure 3.43 shows the baseline and forecasted non-FedEx air cargo activity at Indianapolis International Airport. According to airport officials, the airport has considerable capacity for increased air cargo activity.

**Figure 3.43 Indianapolis International Airport Baseline and Optimistic Air Cargo Forecast**



- Baseline Forecast Domestic Freight.
- Baseline Forecast International Freight.
- Optimistic Forecast Domestic Freight.
- Optimistic Forecast International Freight.

Source: Indianapolis International Airport.

Note: All Carriers Excluding FedEx.

## Air Accidents and Incidents

According to records maintained by the National Transportation Safety Board, there were 27 aviation-related accidents in Indiana in 2006, five involving at least one fatality, resulting in 13 total fatalities that year. In 2005 there were 20 accidents, five of which were fatal, resulting in 10 total fatalities. There was only one fatality resulting from an aviation accident in Indiana in 2004.

## Air Cargo System Performance

Highway access roads to Indianapolis International Airport and the Terre Haute Hulman Regional Airport were designated as NHS intermodal freight connectors of national significance.<sup>9</sup> Airport Expressway served as the main access point to the Indianapolis International Airport prior to the opening of the new passenger terminal in late 2008. At that time, this roadway was operating at LOS A, at which it was expected to continue to operate into the future. The new primary passenger access point to the Indianapolis International Airport is located off of

<sup>9</sup> NHS Intermodal Freight Connectors: Report to Congress, U.S. DOT, 2000.

I-70 on the west side of the airport. U.S. 40 also connects Indianapolis International Airport with I-465/I-74. Segments currently range in performance from LOS A through F, with more segments expected to degrade to below congestion thresholds by 2030.

The Terre Haute Hulman Regional Airport can be accessed from I-70 via SR 46 and SR 42. Both of these facilities are expected to continue to operate at LOS A through 2030, though I-70 is expected to degrade from LOS B to LOS C and D in the vicinity of the airport.

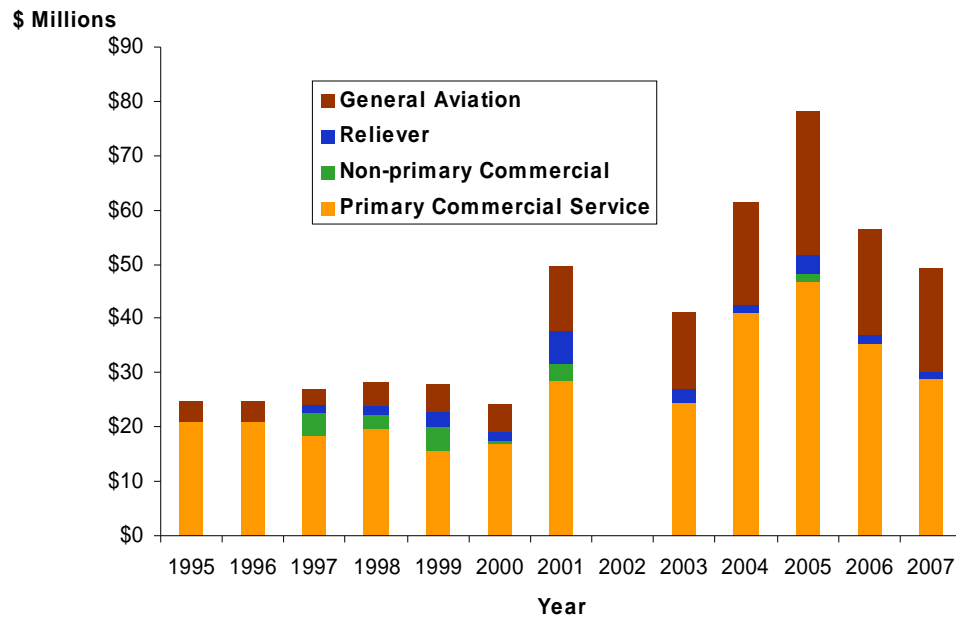
Fort Wayne International Airport, a cargo airport of national significance, can be accessed from I-69 and I-469 via a variety of roads, including Indianapolis Road, Airport Expressway, and Bluffton Road. These roads, as well as the neighboring interstates, are expected to continue to operate at LOS A or B through 2030.

### **Planned Infrastructure Improvements**

The majority of funding for airside improvements, especially at medium and smaller airports, comes from the Federal Aviation Administration's Airport Improvement Program (AIP), which is funded primarily through the collection of user fees and fuel taxes. Any airport that is included in the National Plan of Integrated Airport Systems (NPIAS) is eligible to receive Federal AIP funds. As of the most recent NPIAS update (2007-2011, released in October 2006), 67 Indiana Airports are included. Figure 3.44 summarizes AIP grants to Indiana airports over the past 12 years, by airport type, while Figure 3.45 shows grants to Indiana's top cargo airports over the past three years. Commercial airports may also fund a large share of capital investments through Passenger Facility Charges (PFC) if approved by the FAA, although imposing a PFC results in a reduction in AIP entitlement funds. PFC funds may also be applied to many projects that are ineligible for AIP funds, including landside projects such as terminal improvements and parking facilities.



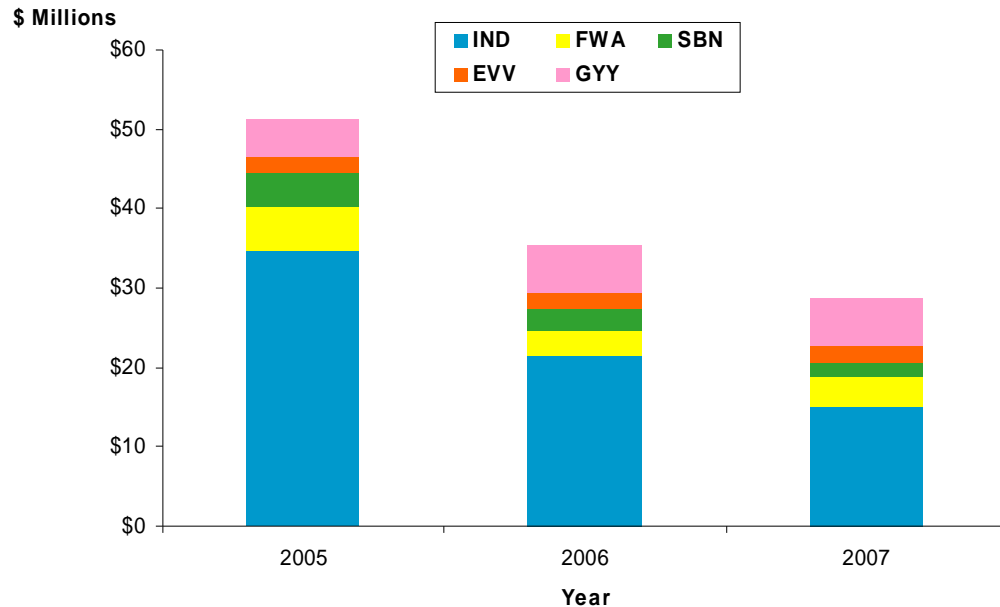
**Figure 3.44 Airport Improvement Program Funds to Indiana, by Airport Type**  
1995-2007



Source: Federal Aviation Administration

Note: Data not available for the year 2002; figure does not show state planning grants, which amounted to under \$1 million in each of several years.

**Figure 3.45 Airport Improvement Program Funds to Indiana's Top Cargo Airports**  
2005-2007



Source: Federal Aviation Administration.

AIP funds are distributed in four categories: Primary Entitlements, Non-primary Entitlements, Cargo Entitlements, and State Apportionments. These entitlement funds are supplemented by discretionary funds, which come as grants throughout the year. Table 3.6 shows entitlement funds allocated to Indiana airports, as well as the statewide entitlement allocation. In addition to the values shown in Table 3.6, for FY08 (beginning October 1, 2007) the state received nearly \$8 million in additional discretionary funds through the end of April 2008.

As part of the biennial NPIAS report, the FAA also publishes five-year activity and development cost forecasts for all NPIAS airports. These estimates are derived primarily from individual airport master plans and from statewide airport plans. The report estimates over \$740 million in development costs for Indiana's 67 NPIAS facilities from 2007 through 2011, including almost \$340 million at the state's top five cargo airports (Table 3.7).

Specific cargo-related improvements are planned for Indianapolis International Airport. New cargo facilities, to be completed in 2009, will add 50,000 square feet of warehouse space.

**Table 3.6 FY 2008 AIP Entitlement Funds to Indiana**

Primary Airport Entitlements	
Airport	Amount
Indianapolis (IND)	\$1,304,974
Fort Wayne (FWA)	\$1,612,424
South Bend (SBN)	\$2,039,658
Evansville (EVV)	\$1,482,026
<b>Total</b>	<b>\$6,439,082</b>
Non-Primary Airport Entitlements	
Airport	Amount
per Airport (61 total)	\$111,240
<b>Total</b>	<b>\$6,785,640</b>
Cargo Airport Entitlements	
Airport	Amount
Indianapolis (IND)	\$3,180,833
Fort Wayne (FWA)	\$512,677
<b>Total</b>	<b>\$3,693,510</b>
State Apportionments	
Indiana	3,433,730
<b>TOTAL ENTITLEMENTS</b>	<b>\$20,351,962</b>

Source: Federal Aviation Administration.

**Table 3.7 Estimated Five-Year Development Costs for Indiana's Top Five Cargo Airports**

Airport	2007 – 2011 Development Cost
Indianapolis (IND)	\$185,848,299
Fort Wayne (FWA)	\$35,441,070
South Bend (SBN)	\$36,329,058
Evansville (EVV)	\$11,513,595
Gary (GYY)	\$70,585,673
<b>Total</b>	<b>\$339,717,695</b>

Source: Federal Aviation Administration.

## 3.5 MARINE

### Infrastructure and Volumes

With Lake Michigan at its north and the Ohio River at its south, Indiana ports are conveniently reachable from points throughout the Great Lakes, the Mississippi River Valley, the Gulf of Mexico, and across the Atlantic Ocean. The Ohio River is maintained at a depth of nine feet, but freezes during the winter, limiting navigation for part of the year.

The Indiana Port Commission (doing business as the Ports of Indiana) operates three public marine ports, described below:<sup>10</sup>

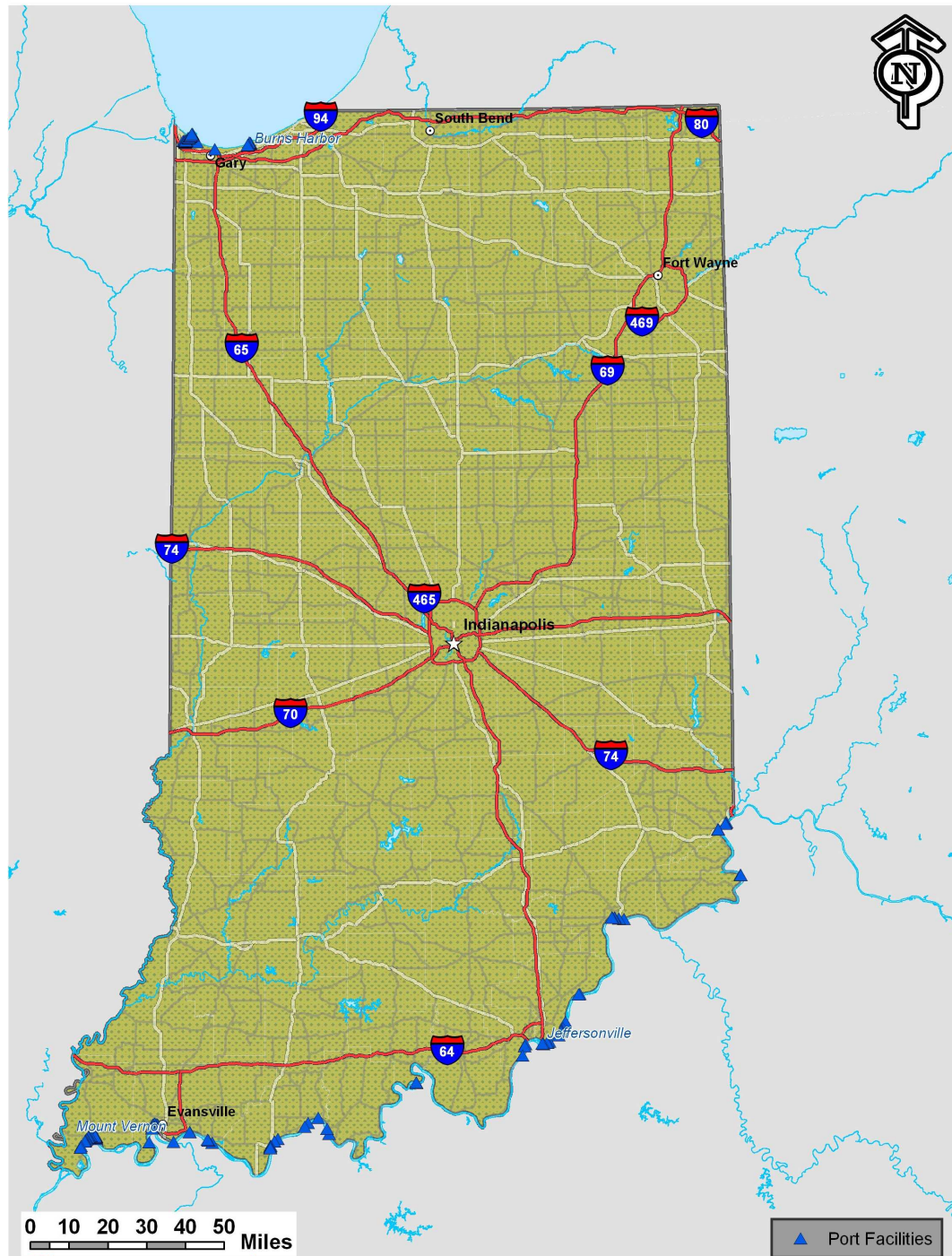
- **Port of Indiana – Burns Harbor** is located on Lake Michigan in Portage, Indiana. The largest commodities processed at this port are steel, iron, and grain. The facility also handles substantial volumes of chemicals, fertilizers, limestone, coal, and heavy lift cargo. This port handles barges traversing the Inland Waterway System via the Illinois Waterway, bulk carriers traveling throughout the Great Lakes, and ocean vessels crossing the Atlantic via the St. Lawrence Seaway. The port facility has 30 on-site tenants and covers over 500 acres. It is served by four railroads, including one Class I railroad (NS). Indiana SR 249 connects the port directly to I-94, less than a mile away.
- **Port of Indiana – Jeffersonville** is located on the Ohio River, directly across the river from the city of Louisville, Kentucky. This rapidly growing facility includes an on-site “steel campus” where numerous value-added steel-production activities occur. There are more than 25 on-site tenants, and over 300 acres of available, undeveloped land. The port primarily handles steel products, grain, and fertilizers. It is directly served by CSX and the Louisville & Indiana Railroad, as well as an on-site switching railroad. The port is also directly connected to the Ohio River Scenic Byway, part of a larger string of belt highways encircling Jeffersonville, Clarksville, and Louisville, Kentucky.
- **Port of Indiana – Mount Vernon**, also on the Ohio River, is located approximately 15 miles west of Evansville, Indiana. The facility covers over 800 acres, has nine on-site tenants, and offers substantial growth potential. The largest commodities traveling out of the port are coal and grain, and the largest incoming commodity is fertilizer. Cement and minerals are among the other commodities passing through this port. An ethanol plant currently under construction on-site has the potential to greatly increase freight activity at the port. Rail service to the port is provided by CSX, while the nearest limited access highway is I-164 in Evansville.

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<sup>10</sup>Ports of Indiana, <http://www.portsofindiana.com>.

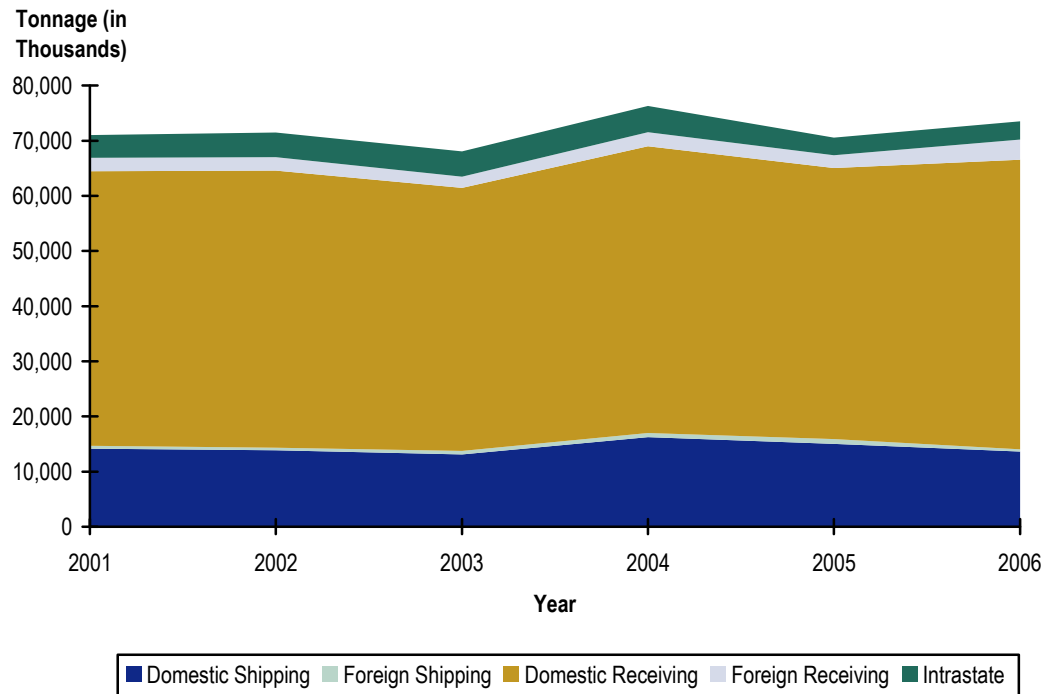
In addition to Indiana's public port system, there are numerous other port facilities throughout the State, most of them privately owned. Among the largest of these are Lake Michigan ports at Indiana Harbor, Gary, and Buffington. These ports primarily serve the steel industry of northwest Indiana. Together with the three public Ports of Indiana, these six facilities handle nearly two-thirds of all waterborne freight in Indiana. All Indiana port facilities, including those owned by private shippers and manufacturers, are shown in Figure 3.46.

Figure 3.46 Indiana's Port Facilities



According to data from the U.S. Army Corps of Engineers' Navigation Data Center, 73.5 million tons of freight moved into, out of, or within Indiana by water in 2006. As shown in Figure 3.47, waterborne freight flows have remained relatively stable in recent years, with imports outnumbering exports by a factor of about 4 to 1 and total waterborne freight flows slightly over 70 million tons.

**Figure 3.47 Indiana Waterborne Freight Flows**  
2001 to 2006



Source: Navigation Data Center, U.S. Army Corps of Engineers.  
<http://www.iwr.usace.army.mil/ndc/index.htm>.

Over the entire length of the Ohio River from Pittsburgh to the Mississippi River, 242 million tons of commodities were shipped, totaling 57.8 billion ton-miles in 2006. Total tonnage has remained fairly steady over the past 10 years, with coal being the predominant commodity, followed by rock, sand, and gravel. Statistics for Mount Vernon, as well as neighboring ports in Louisville and Cincinnati, are shown in Table 3.8.

In 2006, 64.4 million tons of cargo were transported across Lake Michigan, totaling 22.6 billion ton-miles. Like Ohio River traffic, total tonnage has remained fairly steady over the past 10 years. Iron ore is the primary commodity traversing Lake Michigan to Northwest Indiana. Statistics for Indiana Harbor, Gary Harbor, Burns Harbor, and Buffington Harbor, as well as the neighboring Port of Chicago, in Illinois, are shown in Table 3.8.

**Table 3.8 Statistics for Key Indiana and Neighboring Ports**

Port	Maximum Depth (feet)	Tonnage (million tons)	Vessels	Average Draft (feet)
<i>Port of Chicago (IL)</i>	29	25.7	36,587	12
<b>Indiana Harbor</b>	<b>29</b>	<b>16.2</b>	<b>6,007</b>	<b>13</b>
<i>Cincinnati (OH)</i>	30	13.3	66,657	8
<b>Gary Harbor</b>	<b>31</b>	<b>9.1</b>	<b>1,722</b>	<b>Not available</b>
<b>Burns Harbor</b>	<b>30</b>	<b>9</b>	<b>2,012</b>	<b>14</b>
<i>Louisville (KY)</i>	20	7.4	11,751	5
<b>Mount Vernon</b>	<b>14</b>	<b>5.7</b>	<b>6,303</b>	<b>6</b>
<b>Buffington Harbor</b>	<b>27</b>	<b>1.5</b>	<b>106</b>	<b>Not available</b>

Source: U.S. Army Corps of Engineers.

Overall waterborne freight volumes from FAF2 data do not fully illustrate the role of maritime freight in Indiana due to discrepancies between how FAF2 and USACE data are reported. However, FAF2 growth projections for certain types of marine freight movements still illustrate expected trends in demand. In particular, FAF2 predicts that intrastate freight movements by water will more than double by 2035 and that imports and exports entering and leaving the United States through Indiana ports will increase by over 80 percent.

### Port and Maritime Accidents and Incidents

The Marine Casualty and Pollution Database contains information about marine incidents that were investigated by the U.S. Coast Guard. The data do not indicate any major incidents in Indiana ports for 2005, the last year for which data were available.

### Maritime System Performance

Highway access roads to many of Indiana's port facilities were designated as NHS intermodal freight connectors of national significance.<sup>11</sup> Various ports along the Ohio River in the Cincinnati area are accessible to I-275 via U.S. 50. Segments of U.S. 50 in this area currently range from LOS A through D, while in the future some segments are expected to operate at LOS F. The ramp connecting I-275 with U.S. 50 and Belleview Avenue is estimated at LOS F currently.

SR 62 connects the Southwinds Maritime Center in Mount Vernon with SR 69. These facilities are expected to continue operating at LOS A through 2030.

<sup>11</sup>NHS Intermodal Freight Connectors: Report to Congress, U.S. DOT, 2000.



Several port facilities exist in Evansville, all of them linked by SR 62. SR 62 ranges from LOS A to F currently, with conditions expected to degrade on more segments in the future. Ray Becker Parkway is expected to remain at LOS A through 2030, while Fulton Avenue is expected to degrade from LOS C to LOS D and E.

The Perry County Port Authority port facilities in Tell City are considered an intermodal facility of statewide significance. SR 66 and SR 37 range from LOS A to D now and in 2030, though most segments operate at LOS C.

Both Buffington Harbor and Indiana Harbor are located in the Chicago region, directly adjacent to the City of Chicago, and access roads and highways suffer from daily urban congestion. Cline Avenue, the main arterial adjacent to the two ports, operates between LOS A and LOS D, depending on the segment. In 2030 some segments are expected to degrade to LOS B through E.

Due to the nature of river transport, locks are frequently bottleneck points along the Ohio River. The U.S. Army Corps of Engineers reports delays at every lock along the River, sometimes due to lock capacity and sometimes due to malfunction of aging locks.

### **Planned Infrastructure Investments**

All three Ports of Indiana ports have additional capacity for growth, as do the ports' associated waterways. Actual expansion of port facilities will be spurred by private investment; however, no specific expansion plans were available. One driver of future growth, particularly at the two Ohio River ports, will be the bio-fuels industry. An ethanol plant is currently under construction at Mount Vernon, and the Port is working to attract a biodiesel plant as well. The Ports of Indiana has the authority to use revenue bonds and other tools as incentives for development at its facilities without the use of tax dollars.

While the ports themselves have ample capacity for expansion, access to the ports has been identified as an issue that may hinder future growth. Each port is served by only a single Class I railroad, and the Mount Vernon port in particular is also constrained by inadequate direct highway access. The Interstate 69 project connecting Evansville with Indianapolis will improve this situation, as will improvements to SR 62 west of Evansville (the SR 62 improvements will not be complete until at least 2026).

## **3.6 PIPELINE**

### **Infrastructure and Volumes**

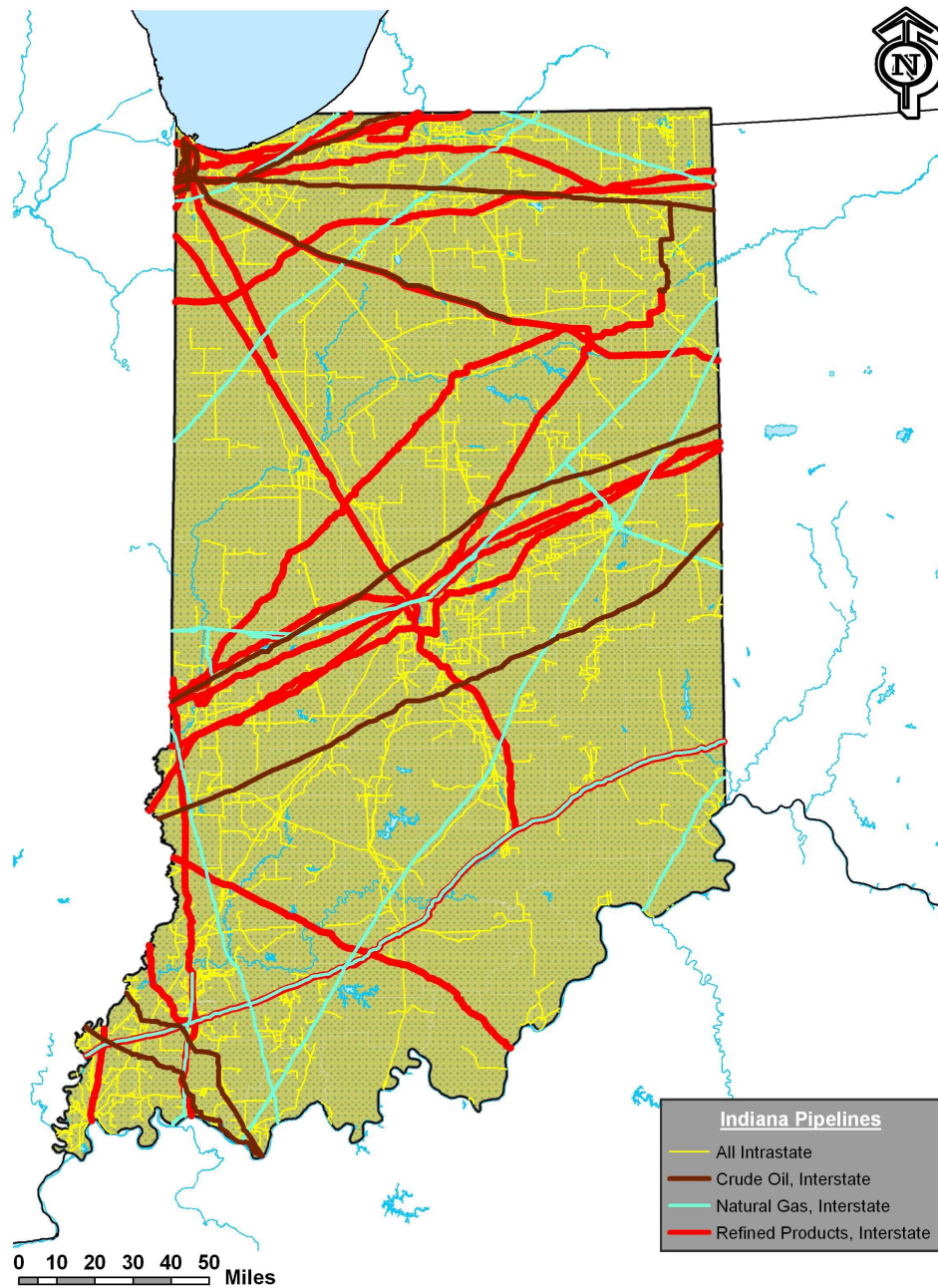
According to data from the Indiana Geologic Survey, as of 2002 there were approximately 13,000 miles of natural gas, crude oil, and refined fuel transmission pipelines traversing the State of Indiana. Of these, approximately 4,600 miles are classified as interstate (not including local pipelines that briefly cross

state lines). Among interstate pipelines, just over half of all lines (by length) carry refined fuels, nearly 28 percent carry natural gas, and the remaining 18 percent carry crude oil. Among the 8,400 miles of intrastate pipeline, nearly 85 percent carry natural gas, 9 percent carry crude oil, and 6 percent carry refined fuels. Pipelines in Indiana are shown in Figure 3.48.

### *Natural Gas Pipelines*

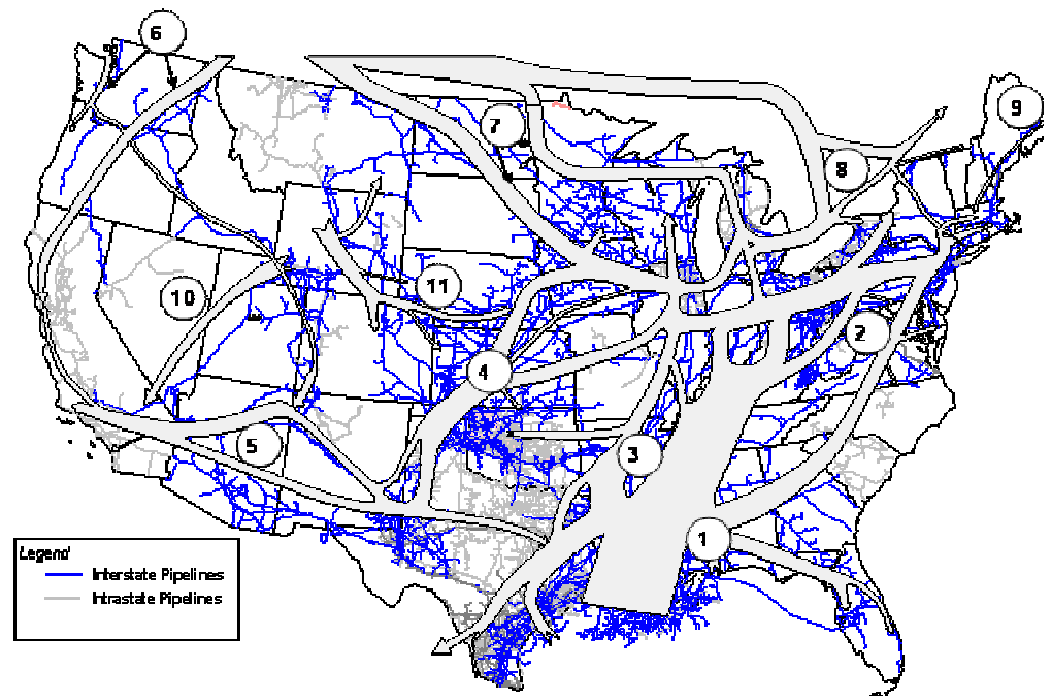
The Energy Information Administration (EIA), a division of the U.S. Department of Energy, also maintains data on pipelines, with the most detailed information covering natural gas transmission. The EIA classifies interstate natural gas flows into 11 “Major Corridors” (Figure 3.49), and Indiana is part of three of these corridors: Southwest-Midwest (3), Southwest Panhandle-Midwest (4), and Canada-Midwest (7). Completion of the Rocky Express Pipeline – East project in 2009 will extend a fourth corridor, the Rocky Mountains – Midwest corridor (11), through Indiana to Ohio. That project is discussed further in the section on “Planned Infrastructure Improvements.”

**Figure 3.48 Indiana Pipelines**



Source: Indiana Geologic Survey.

Note: The Indiana Geologic Survey refers to these data as “known pipelines.”

**Figure 3.49 Natural Gas Corridors in the United States**

Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division.

EIA natural gas pipeline flow data show that the majority of the natural gas flowing through Indiana pipelines enters the state from the south (Kentucky) and west (Illinois), passing through and leaving through the north (Michigan) and east (Ohio) (Table 3.9). For example, in 2006 approximately 2.2 trillion cubic feet of natural gas passed into Indiana, with over 70 percent entering from Illinois. In the same year, the 1.8 trillion cubic feet left Indiana into neighboring states, with approximately 95 percent heading to Ohio and Michigan. Imports exceeded exports by 476 billion cubic feet, with that remainder accounting for 96 percent of all natural gas consumption in Indiana, indicating minimal in-state production.

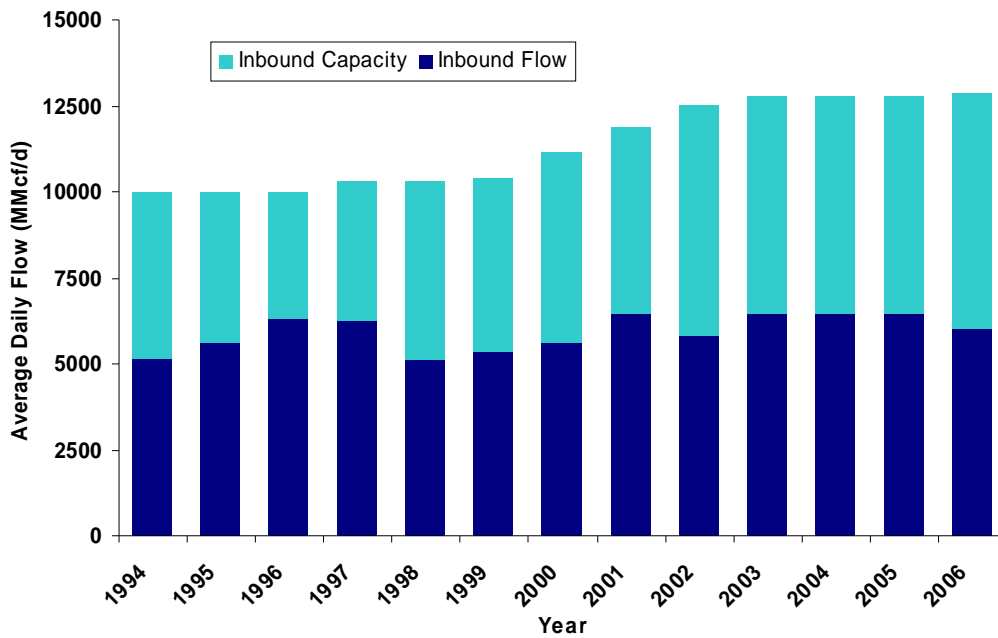
**Table 3.9 Natural Gas Flowing into and out of Indiana, 2006**  
*Millions of Cubic Feet*

Neighboring State	Into Indiana	From Indiana
Illinois	1,595,122	10,869
Kentucky	427,170	78,956
Michigan	207,470	847,036
Ohio	3,953	821,090
<b>Total</b>	<b>2,233,715</b>	<b>1,757,950</b>
<b>Net of Imports Minus Exports</b>	<b>475,675</b>	

Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division.

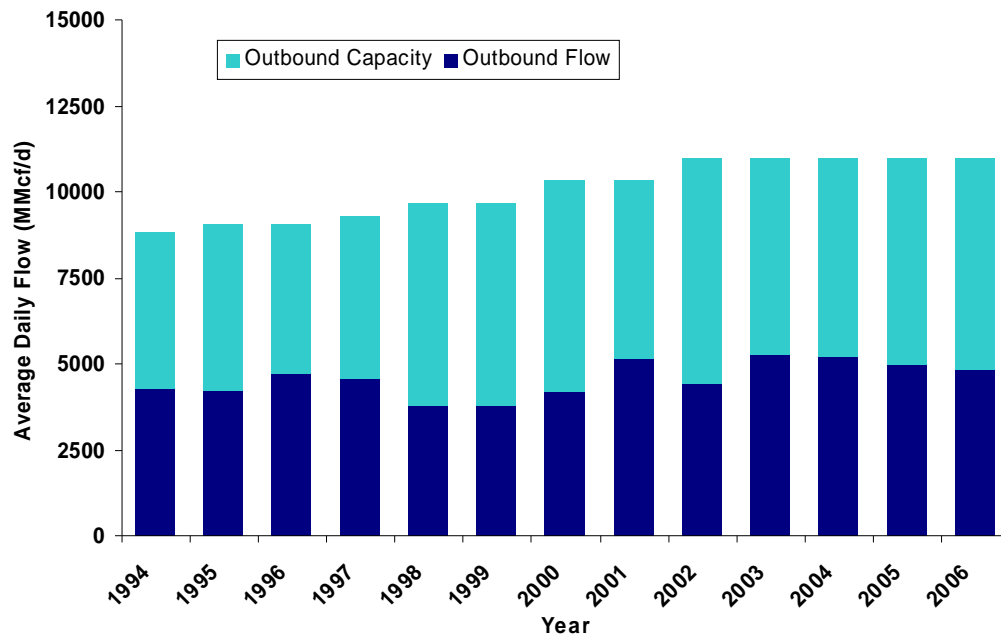
Figure 3.50 and Figure 3.51 chart the average daily natural gas flows into and out of Indiana over the 12-year period ending 2006, as compared with system capacity. The figures indicate that there is substantial excess capacity in both directions. Among individual neighboring states with significant flows, average daily natural gas flow from Illinois into Indiana was at 60 percent capacity in 2006, from Kentucky to Indiana was at 33 percent, from Indiana to Ohio was at 42 percent, and from Indiana to Michigan was at 71 percent.

**Figure 3.50 Indiana Inbound Daily Natural Gas Flows and Capacities**  
1994-2006



Source: Energy Information Administration.

**Figure 3.51 Indiana Outbound Daily Natural Gas Flows and Capacities**  
1994-2006



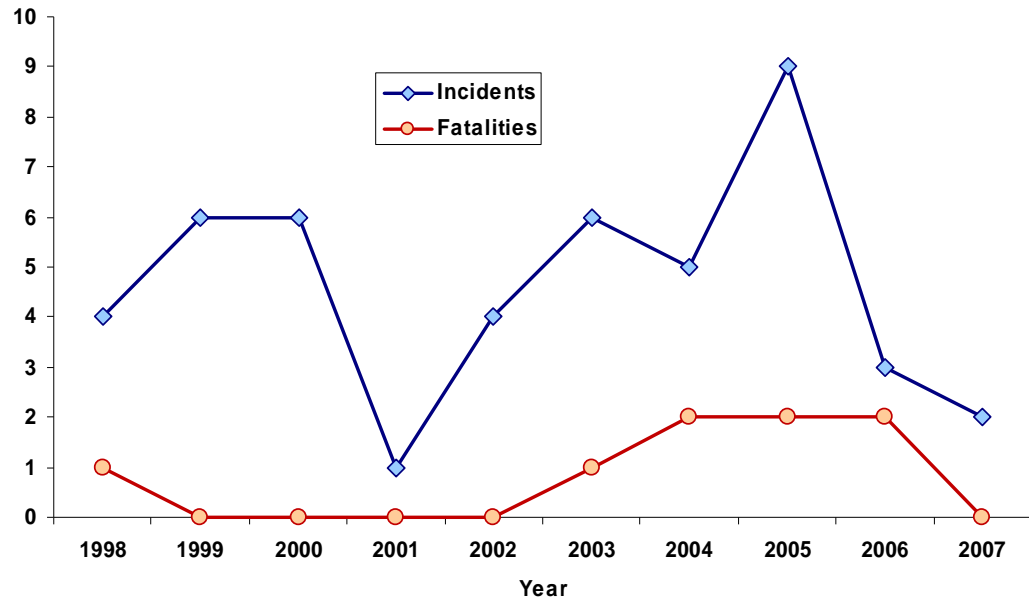
Source: Energy Information Administration.

To examine future pipeline demand to, from, and within Indiana, FAF2 projections are used. FAF2 categorizes pipeline commodity flows together with the “unknown” category due to the overall uncertainty of determining origins and destinations when examining pipeline flows. By weight, this category is forecasted to double from 176 million tons in 2002 to 378 million tons by 2035. 2006 provisional FAF2 data showed approximately 180 million tons shipped into, out of, or within Indiana, suggesting growth slightly below projections.

### Pipeline Accidents and Incidents

Figure 3.52 shows pipeline-related incident and fatality rates from 1998 through 2007 in the State of Indiana. The data show 46 total incidents over that 10-year period, with eight total fatalities. There is no discernable trend indicating a rise or decline in either incidents or fatalities.

**Figure 3.52 Pipeline Incidents and Fatalities in Indiana**  
1998 – 2007



Source: Pipeline and Hazardous Materials Safety Administration.

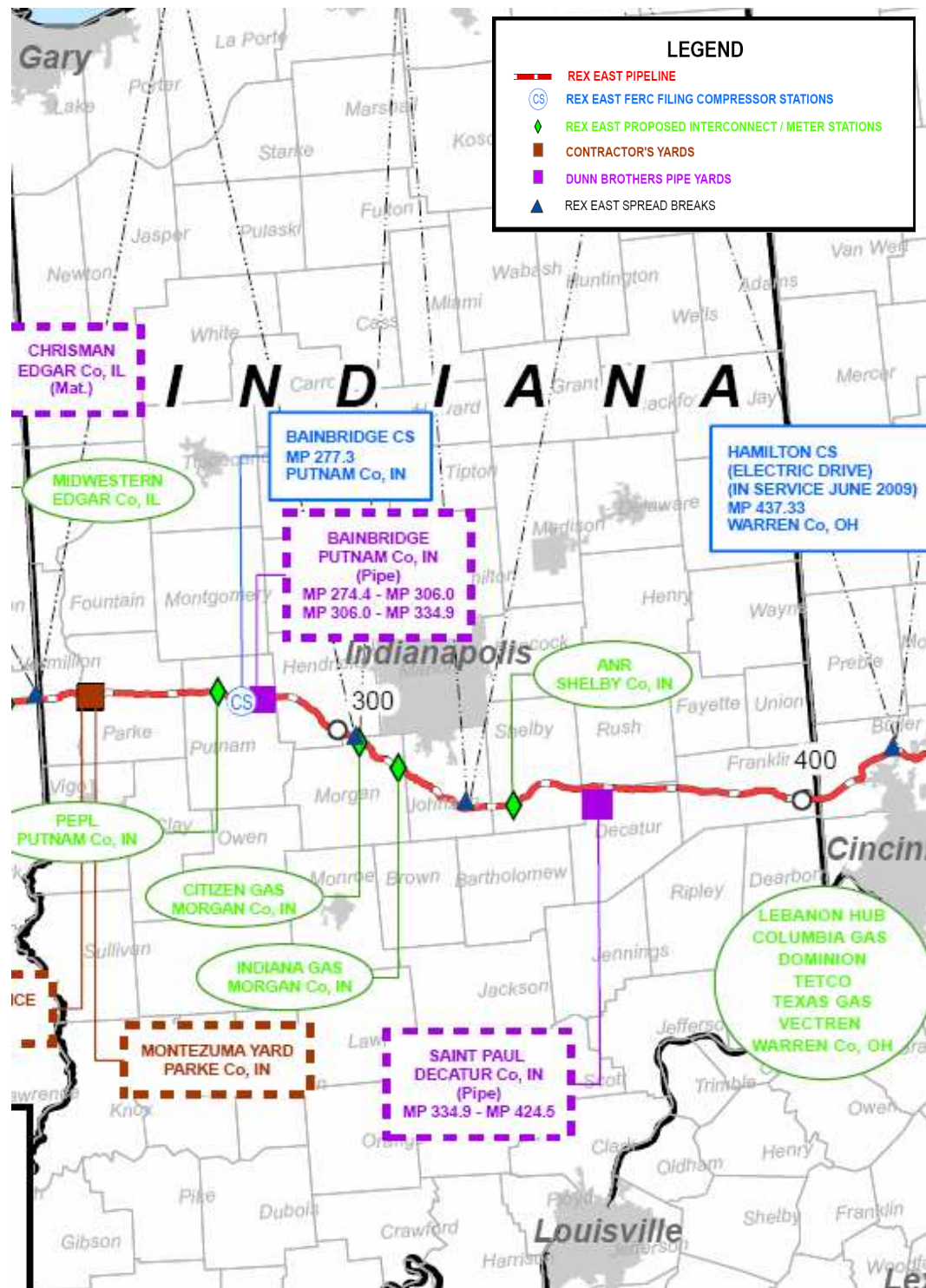
Note: Includes incidents involving the local natural gas distribution system, which is not addressed elsewhere in this section.

### Planned Infrastructure Improvements

Because pipelines are owned and operated in the private sector, little is known about the long-term plans for pipeline expansion in Indiana. However, one major project currently in planning that will affect Indiana is the Rockies Express Pipeline – East (REX – East). This 638-mile pipeline would run from central Missouri, the eastern terminus of the REX – West pipeline, which recently entered service, eastward to eastern Ohio. It would provide service connections in the States of Illinois, Indiana, and Ohio, and could potentially link to an additional new pipeline extending east as far as New Jersey. The project has not yet received regulatory approval, but pending that approval would be constructed in the first half of 2009, entering service in July of that year. The 42-inch diameter pipeline would, along with a short section of another pipeline in northwest Indiana, be the largest diameter pipeline of any type in Indiana. Figure 3.53 shows the proposed route through Indiana.



**Figure 3.53 Map Showing the Planned REX – East Pipeline Route through Indiana**



Source: Rockies Express Pipeline LLC (<http://www.rexpipeline.com/>).



## 4.0 Statewide Economic and Industry Profiles

Indiana's ability to compete goes beyond being industrious and having a strong work ethic, but also demands an efficient transportation system that can deliver products reliably and on time. At the center of the nation's Midwest manufacturing belt, the efficiency of Indiana's freight transportation system also is fundamental to overall U.S. manufacturing strength and competitiveness. The growth of freight volumes in Indiana will be influenced by the interplay of a variety of factors that will have a bearing on transportation demand. These factors include overall population and employment growth, changes in national and global logistics patterns, and the evolution of the State's industry structure. Industries, ranging from manufacturing to construction have specific freight needs, and their growth will affect freight demand. On the supply side (i.e., the provision of freight transportation infrastructure and quality freight services), the strength of Indiana's transportation system and its ability to carry freight efficiently will affect, positively or negatively, the overall competitiveness of the State's industries and its economy.

The relationship between freight activity and the Indiana economy is strong and multifaceted. For example, industries rely heavily on the efficient movement of goods, both for the outbound shipments of their products to reach worldwide markets, as well as for inbound shipments of intermediate goods required for production. In addition to freight's importance to Indiana's industries, efficient multimodal freight transportation systems can help to minimize the cost of consumer goods to Indiana's residents. Transportation infrastructure improvements that reduce costs by either: 1) lowering travel times; or by 2) increasing the reliability of on-time shipments translate directly into benefits for the Indiana economy. Finally, the goods movement industry cluster (e.g., trucking, distribution, airports, etc.) provides a significant number of jobs and income to Indiana residents working for the businesses that process, ship, and deliver goods bound for destinations within Indiana, as well as to other locations within the United States and throughout the world.

This section of the Indiana Multimodal Freight and Mobility Plan covers:

- **A Profile of the Indiana Economy** – Historical growth trends for population, employment, personal income, industry structure, and gross state product;
- **The Economic Importance of the Indiana Goods Movement Industry** – Jobs and gross state product emanating from the industries working directly within freight transportation (trucking, warehousing, air, waterborne commerce, wholesale trade, and rail); and

- **An Assessment of the Top Industries Shipping Goods on the Indiana Transportation Network** – Industries such as manufacturing, energy, construction, retail trade, and agriculture/food ship significant volumes of goods, both in terms of tonnage and value to, from, and within Indiana. This section profiles the economic trends of the top freight-shipping industries.

## **4.1 DEMOGRAPHIC AND SOCIOECONOMIC TRENDS IMPACTING INDIANA’S FREIGHT SYSTEM**

Given the close relationship between freight transportation (which by its very nature is a business activity) and the economy, it is crucial that an assessment of Indiana’s current and future freight transportation network and services be directly linked to the industry trends (and industry demands) of the State. This economic profile begins with an analysis of broad trends across familiar demographic and economic indicators (population and employment), moving to more specificity regarding regional differences in growth trends and the industrial mix of the State. These demographic, economic, and industry trends will influence the demands placed on the Indiana freight transportation system in the future.

### **State-Level and National Trends Put Pressure on Indiana’s Freight Transportation System**

In recent decades, Indiana has exhibited moderate growth relative to the nation and other states, whether measured by its population, overall income gains, or economic growth. Among Midwestern states, Indiana has been outpacing its neighbors Ohio and Michigan while trailing regional leader, Minnesota, in population and economic growth. Indiana’s expanding economy and population growth put pressure on the State’s transportation system, as well as on all other aspects of its infrastructure: water and wastewater, schools, healthcare facilities, power generation, and others. Indiana’s transportation network and services must accommodate the mobility, logistics, and consumer needs of an increasing number of residents, workers, visitors, and businesses, and do so reliably, safely, and efficiently. At the geographical center of the nation’s economic activity, overall U.S. growth also has a direct bearing on the functioning of Indiana’s transportation system – as the expansion of the U.S. economy translates to more goods being shipped through and processed in Indiana transportation facilities. For these reasons, the decision-making process regarding the future of Indiana’s freight-related infrastructure needs to incorporate and respond to the intrinsic growth conditions of the State, as well as Indiana’s transportation and economic roles within the greater U.S. economy.

### *Economic Size – Indiana’s Gross State Product*

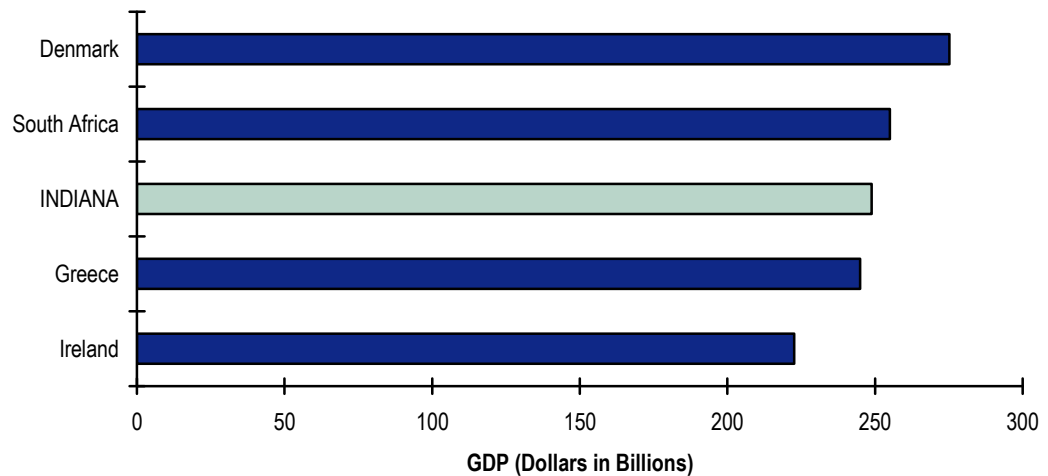
Indiana’s freight transportation system underpins the State’s \$250 billion economy (an economy larger than Greece’s and about the size of South Africa’s; see Figure 4.1) and its three million jobs.<sup>12</sup> Indiana’s gross state product (GSP), the most common measure of economic size and activity, grew by 64 percent between 1990 and 2006 (adjusted for inflation), essentially the same as the 63 percent increase in U.S. gross domestic product (GDP) posted over the same period. Indiana is the most manufacturing-intensive State in the country<sup>13</sup> and these businesses rely on the efficient movement of goods to keep costs down, customers supplied, and to maintain competitiveness within the world market. Freight supports the Indiana economy through hauling stone, cement, structural steel, and other items used in the State’s construction industry. Freight transportation also is paramount in making Indiana’s food and agricultural products available throughout the country and world. Indiana’s growing population and economy also have created proportional increases in energy demand, and freight rail is the chief transportation mode for existing and new coal-fired electric generating plants. Indiana’s stone industry, a historical fixture of the State’s economy, has relied on truck and rail service for decades and remains a top commodity (by weight) transported on the State’s freight transportation network. The future expansion of the Indiana economy will depend on the health of these and other industries. The Indiana freight transportation system provides a crucial foundation on which these industries can grow.

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<sup>12</sup>Economic and employment data from the U.S. Bureau of Economic Analysis and Bureau of Labor Statistics.

<sup>13</sup> Measured both in terms of share of gross state product and share of total jobs.

**Figure 4.1 Economic Size Makes Indiana a Major Player in Global Commerce**

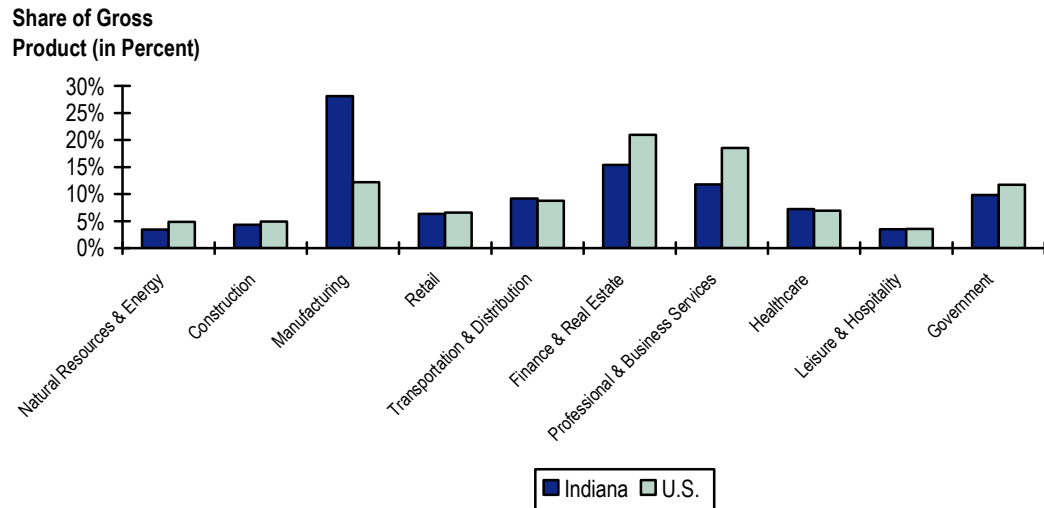


Source: World Bank, 2006 (Nominal Gross Domestic Product by Country).

#### *Industry Mix – Indiana’s Economic Composition*

Indiana’s defining economic characteristic compared to the nation and most other states is the relative size of its manufacturing sector. In 2006, manufacturing accounted for well over one-quarter of Indiana’s gross state product compared to 11 percent for the nation. Figure 4.2 illustrates the contribution of each major sector to Indiana’s GSP where the relative size of the State’s manufacturing sector can be easily seen. Manufacturing is more dependent on transportation than most other industry sectors and counts on the reliability and connectivity provided by the rail, water, air, and road networks to produce and deliver products. Manufacturers keep inventories low to reduce costs and this requires a dependable, multimodal supply chain.

**Figure 4.2 Contribution to Gross State Product by Industry**  
*Indiana Compared to the United States*



Source: Bureau of Economic Analysis; Data are for 2006.

With its huge manufacturing sector commanding a disproportionately large part of its output, Indiana's economy is less dependent than the United States' economy on service-related industries, including retail, finance, real estate, business, and professional services, however growth in these areas will have a significant impact on the growing freight industry in Indiana.

Service industries tend to move more time-sensitive goods. The trucking and air industries have historically dominated these types of shipments, but railroads have responded by offering scheduled services and improved reliability. Containers and trailers filled with goods supporting the retail industry, in particular, have exhibited and continue to exhibit strong growth prospects for the rail industry.

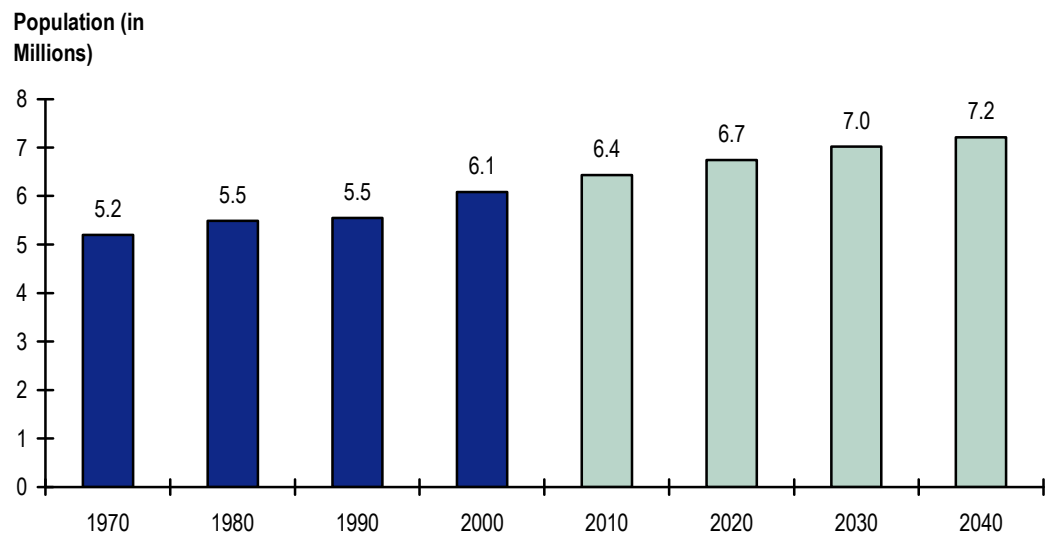
Growth in service industries is driven by increasing business and consumer demand. Businesses demand increasingly efficient communication, finance, transportation, and distribution services in order to develop competitive advantages and as essential inputs into the production of goods and other services. For consumers, as personal income grows so does demand for services such as banking, telecommunications, tourism, and entertainment. In general, demand for services due to population and income growth rises more rapidly than does the demand for manufactured or agricultural products.

Fueling the growth of these service sectors is the continued growth in Indiana population, employment, and income. Each of these topics is discussed below.

## Population

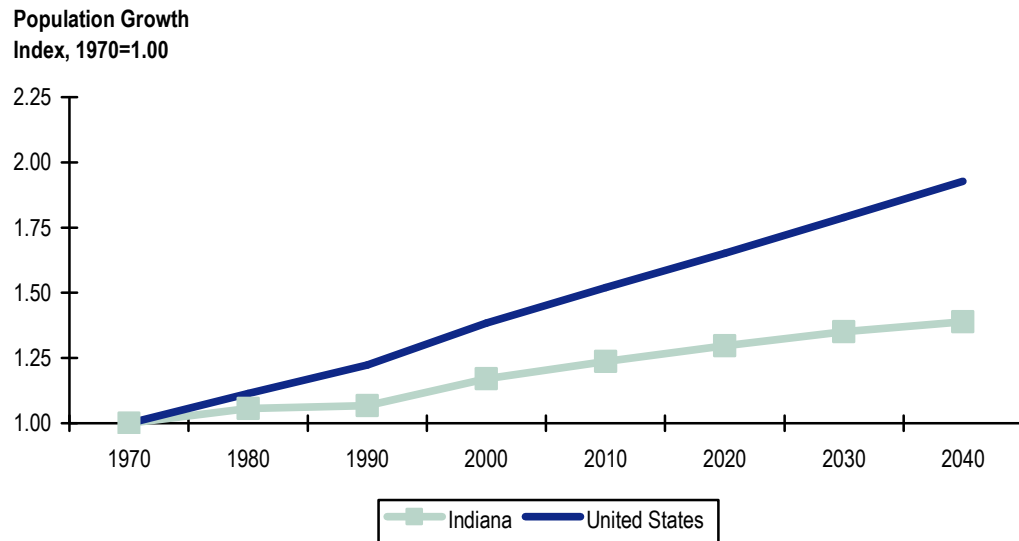
Population growth has a direct impact on transportation demand. More people take more trips, require more services, and need more goods to sustain themselves. After decades of strong population increases following World War II, Indiana's population growth slowed in the 1970s, but has since resumed more robust growth beginning in the 1990s (see Figure 4.3). As of 2007, Indiana was home to over 6.3 million residents, making it the 15<sup>th</sup> most populous State in the country. According to state population projections, Indiana is expected to add more than 660,000 people during the next 22 years and will reach a population of just over 7.0 million by 2030 (this growth is the equivalent to adding the populations of two Allen counties to the State). The rate of Indiana's population growth is lower than the United States (see Figure 4.4) but significantly higher than the average for the Midwest.

**Figure 4.3** Indiana Historic and Forecast Population Growth  
1970 to 2040



Indiana's moderate but constant growth in population and economic output puts pressure on all aspects of its infrastructure: its water systems, schools, healthcare facilities, etc. In particular, the State's transportation system, must accommodate the mobility, consumer, and logistics needs of an increasing number of residents, workers, and businesses, and do so reliably, safely, and efficiently. For these reasons, the decision-making process regarding the future of Indiana's freight transportation infrastructure and services needs to incorporate and respond to these growth conditions.

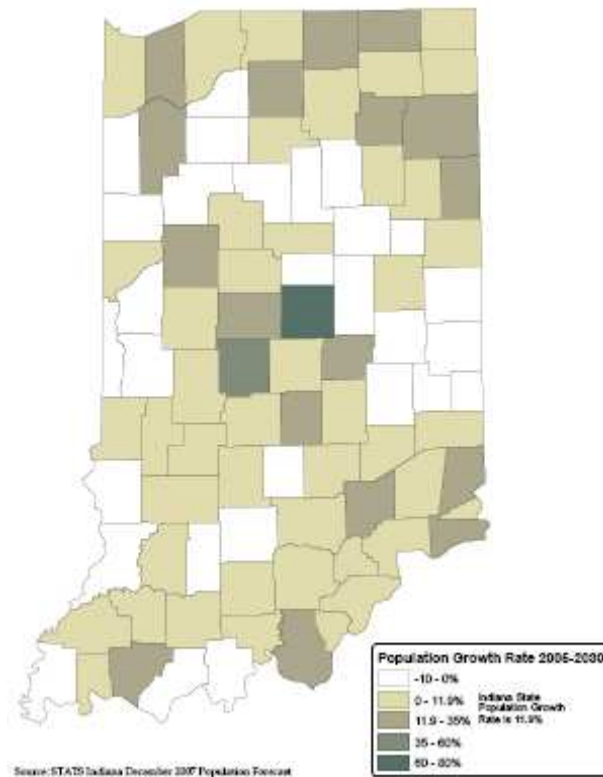
**Figure 4.4 Projected Population Growth**  
*Indiana versus United States*



Sources: U.S. Census Bureau and STATS Indiana (Official State Forecast, December 2007).

Indiana's population growth is particularly concentrated in or near its major metropolitan areas (see map, Figure 4.5). Through 2030, the counties that ring Indianapolis, led by Hamilton, Hendricks, and Johnson counties, are expected to exhibit the State's fastest growth rates. This robust growth attests to the Indianapolis metropolitan area's emergence as one of the more economically successful Midwestern areas in recent decades, joining Minneapolis-St. Paul, Columbus (Ohio), and Chicago. Other parts of Indiana that are expected to enjoy moderate-to-fast population growth through 2030 include the counties that are on the outskirts of Louisville, Chicago, and Cincinnati, as well as the Fort Wayne, Lafayette, and South Bend metropolitan areas. Several of Indiana's more agriculturally intensive counties in the north central part of the State are projected to post slower growth rates, with some expected to lose population over the next two decades.

**Figure 4.5** Projected Population Growth by County  
2005 to 2030



Source: STATS Indiana (Official State Forecast, December 2007).

**Population Density** – Since 1950, the very nature of Indiana has changed as a result of increases in population density and land use patterns that have extended the urban and suburban reach of the State’s cities, particularly around Indianapolis. In 1950, Indiana was more rural and had a population density of 110 people per square mile. In the last 50 years, following significant population growth, Indiana’s population density reached 170 people per square mile by 2000. The ramifications of the State’s long-term population growth and corresponding consumption of land include a heightened interest in land use issues, congestion, higher land acquisition costs, and limited available alignments for building new or expanded guideways (i.e., rail lines and roadways). These factors will influence how Indiana approaches freight transportation planning in coming years.

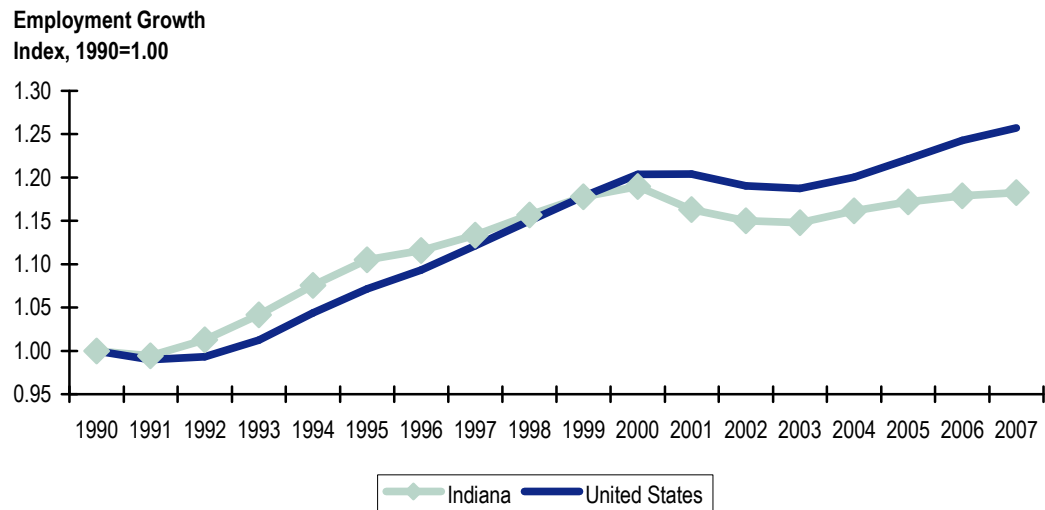
### *Employment*

From a jobs perspective, the Indiana economy employed approximately three million people in 2007, accounting for 2.2 percent of all U.S. jobs. Between 1990 and 2007, total employment in Indiana increased by 18 percent, compared to a



U.S. growth rate of 26 percent, as the State added 460,000 new jobs (net). In general, Indiana is procyclical with national employment growth trends (see Figure 4.6). However, the impacts of the 2001-2002 recession resulted in a slowing of Indiana's jobs growth rate which had actually exceeded the nation's during many years in the 1990s. Now approaching the later part of the first decade of the 21<sup>st</sup> century, Indiana's jobs growth remains slower than the nation's.

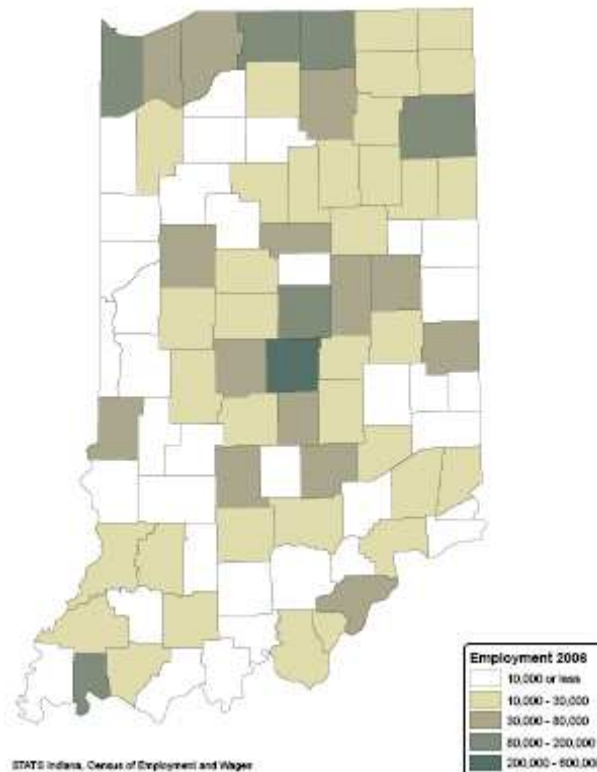
**Figure 4.6 Job Growth, Indiana versus United States**  
1990-2007



Source: Bureau of Labor Statistics.

Businesses generate freight activity and the parts of Indiana with the largest numbers of jobs and population also will have significant freight needs. Figure 4.7 shows the distribution of employment in Indiana by county. The highest job concentrations in the State are located in the Indianapolis area, the Northwest (metropolitan Chicago), and along the northern tier, including metropolitan Fort Wayne and South Bend-Elkhart. Although Indiana's large employment centers are major generators and consumers of goods transported via the State's highways, railways, airports, and river ports, other parts of the State with considerable manufacturing, mining, and agricultural operations also require a strong and efficient freight transportation network. The freight needs of these industries and their activities within Indiana are discussed later in this section.

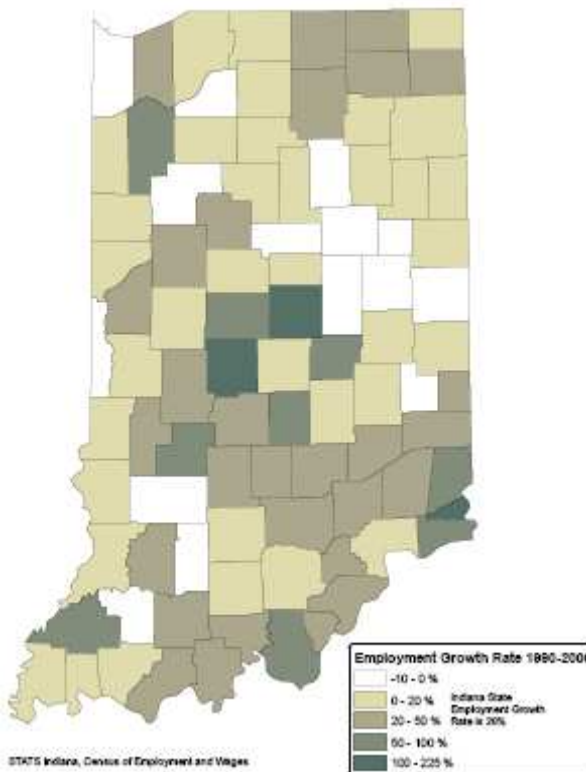
**Figure 4.7** Indiana Job Concentrations  
2006



Source: STATS Indiana, Quarterly Census of Employment and Wages.

Indiana's expanding economy and job numbers translate to higher demand for a full range of goods – all possessing transportation requirements. Indiana's jobs growth is not limited to a few isolated areas, but is occurring throughout most of the State. Figure 4.8 shows employment growth in Indiana by region from 1990 to 2006. The State's strongest jobs growth took place in the suburban counties ringing Indianapolis, including Boone, Hancock, Hendricks, Hamilton, and Johnson counties. Southern Indiana's counties tend to show faster growth than the northern counties, with pronounced growth in outer Cincinnati and Louisville, as well as in Gibson County, the site of a major Toyota assembly plant. All of the counties in Southern Indiana along I-65 grew jobs faster than the state average between 1990 and 2006. In Northern Indiana, outer suburban Chicago (Porter and Jasper counties), Elkhart, and Lafayette showed strong growth during the period.

**Figure 4.8** Indiana Employment Growth by County  
1990 to 2006



Source: STATS Indiana, Quarterly Census of Employment and Wages.

### *Income*

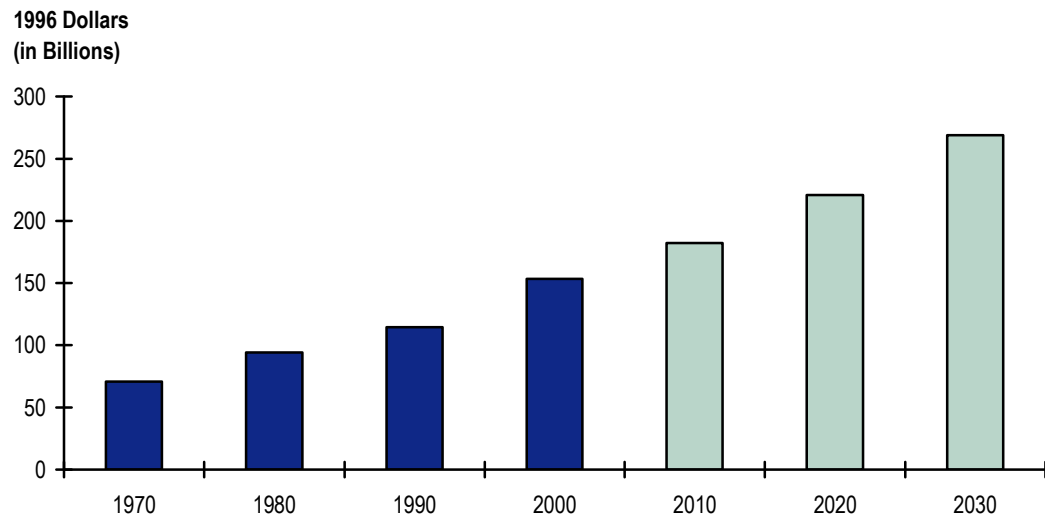
While the expansion of jobs and gross state product are valid measures of overall economic growth, people ultimately need higher-income levels to justify increased consumption (manifested through construction, retail sales, restaurants, and leisure spending). Per capita personal income in Indiana was \$32,226 in 2006, ranking Indiana 37 out of 50 states. Per capita personal income growth in Indiana has been slower than most U.S. states. Between 1996 and 2006, per capita personal income grew 12.1 percent, ranking Indiana 47<sup>th</sup> in the country in terms of growth rate, and the 20-year growth rate was 26.8 percent, ranking Indiana 41<sup>st</sup>.<sup>14</sup>

In real terms, total income levels in Indiana have historically grown at a slow-to-moderate pace and are forecast to continue increasing in a similar fashion (see Figure 4.9). Between 2000 and 2030, Indiana's total income is expected to increase by about \$135 billion. These dollars, in combination with the expected rise in the State's population, will contribute to higher consumer demand (for

<sup>14</sup>STATS Indiana.

products ranging from groceries and automobiles to the lumber and concrete required in the construction of homes) in Indiana in coming decades, increasing the need for efficient goods movement by both rail and truck to satisfy this demand.

**Figure 4.9 Historical and Projected Indiana Income Growth**  
*In Billions of 1996 Dollars*



Source: Woods & Poole.

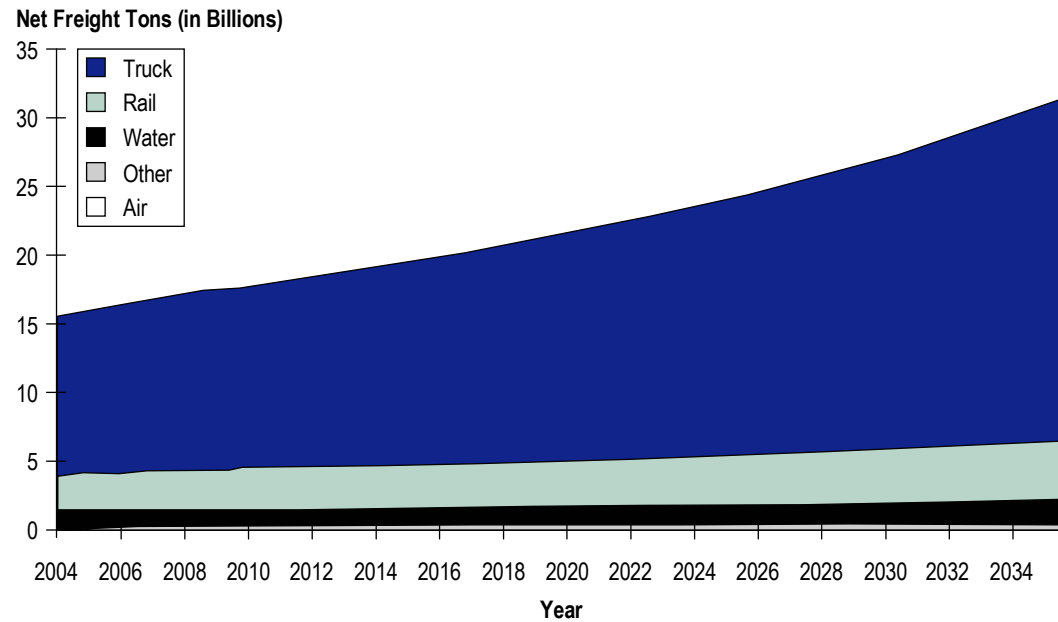
## 4.2 NATIONWIDE FREIGHT GROWTH AND ITS IMPACT ON INDIANA'S TRANSPORTATION NETWORK

The demand for freight goods movement in the United States is growing – a trend that will have significant impacts on the Indiana transportation network. Assuming moderate rates of economic growth – between 2.5 to 3.0 percent a year – the tonnage of freight moved in the United States will double by 2035 (see Figure 4.10). This rate of growth is about the same as the last 20 years and roughly tracks growth in the U.S. Gross Domestic Product. The problem is that few provisions have been made to accommodate this growth, and the nation is in the early stages of a freight transportation capacity crisis.

Indiana, with its location at the centerpoint of the nation's population (see Figure 4.11), will be affected enormously by this growth and transportation investment decisions made nationwide. Simply, as cargo volumes grow in response to the expanding U.S. economy, more freight traffic will be routed through Indiana's highways, waterways, airports, and rail lines. While Indiana's location holds a remarkable advantage for growth in the distribution industry, its transportation infrastructure must be able to accommodate this growth

efficiently and reliably for the benefit of both the state and the nation. As the “Crossroads of America”, two-thirds of the freight carried by rail in Indiana--198 million tons in 2005--was passing through the state (i.e., originating *and* terminating in locations outside the state).<sup>15,16</sup> The story for trucks is not quite as dramatic, with one-quarter of all truck freight--168 million tons in 2006--crossing through Indiana.<sup>17</sup> The ease by which freight flows through Indiana, today and in the future, will continue to affect the operations of businesses well beyond the state’s borders.

**Figure 4.10 Forecasts of Freight Tonnage through 2035**



Source: Global Insight, Inc., TRANSEARCH, 2004.

<sup>15</sup> Surface Transportation Board Carload Waybill Sample, 2005.

<sup>16</sup> This includes intermodal shipments coming from or destined for Indiana that pass through Indiana by rail and are loaded or unloaded at intermodal facilities in Chicago.

<sup>17</sup> Federal Highway Administration Freight Analysis Framework (FAF), 2006. Unlike rail, a significant portion (42 percent) of Indiana motor carrier freight volume is for local, intrastate trips.

**Figure 4.11 Median Center of Population for the United States**



Source: U.S. Census Bureau;

Note: The median center is located at the intersection of two median lines, a north-south line (a meridian of longitude) constructed so that half of the nation's population lives east and half lives west of it, and an east-west line (a parallel of latitude) selected so that half of the nation's population lives north and half lives south of it. In 2000, the median center of the U.S. population was located in southwest Indiana between Daviess and Martin counties.

### **4.3 THE IMPORTANCE OF FREIGHT TO THE INDIANA ECONOMY**

Transportation and the movement of goods are important contributors to the Indiana economy, providing jobs and income to thousands of Hoosiers. Beyond the contributions of trucking, air, rail, and inland waterway shipping to the Indiana economy, several major economic sectors are significant receivers and shippers of goods, and thus reliant on the State's transportation network and services to conduct their day-to-day operations. The next sections of the report include two separate analyses that provide more depth concerning: 1) the industries responsible for the actual transporting and handling of goods in Indiana, the "Goods Movement Industry Cluster"; and 2) the "Freight Intensive Industries" (e.g., manufacturing) that are particularly reliant on the efficient movement of goods to remain economically competitive. Both analyses provide industry detail concerning employment and contributions to the Indiana gross state product.

## Goods Movement Industry Cluster

To assess the “goods movement industry cluster” in Indiana, six industries with primary functions related to the transport and handling of goods were selected for further analysis. The Indiana goods movement industry encompasses industries representing a specific mode (truck transportation, water transportation, air transportation, and rail transportation) and those involved in the handling and processing of freight (wholesale trade and warehousing and storage). Table 4.1 provides definitions of these industries, mostly at a three-digit level of detail, based on the 2002 North American Industry Classification System (NAICS).

**Table 4.1 Goods Movement Industry Cluster**

Industry	Description
<b>Truck Transportation (484)</b>	Provides over-the-road transportation of cargo using motor vehicles, such as trucks and tractor-trailers. This sector includes general freight trucking and specialized freight trucking. General freight transportation establishments handle a wide variety of general commodities, generally palletized, and transported in a container or van trailer. Specialized freight transportation is the transportation of cargo that, because of size, weight, shape, or other inherent characteristics require specialized equipment for transportation.
<b>Warehousing and Storage (493)</b>	Includes operating warehousing and storage facilities for general merchandise, refrigerated goods, and other warehouse products.
<b>Water Transportation (483)</b>	Includes both passengers and cargo using watercraft, such as ships, barges, and boats. This group is composed of two industry groups: 1) deep sea, coastal, and Great Lakes water transportation; and 2) inland water transportation.
<b>Air Transportation (481)</b>	Includes both passenger and cargo carriers, which are mostly passenger, but separates out air courier services couriers of letters and parcels. This group excludes nonscheduled air transportation and airports, flying fields, and airport terminal services, which are mostly passenger services.
<b>Rail Transportation (482)</b>	Includes line-haul operations for both freight and passenger railroads, specifically Amtrak and regional commuter agencies and railroad switching and terminal establishments mostly local switching services and short-lines. This also includes rental of railroad cars and ancillary services, such as rail car cleaning and passenger and railroad equipment.
<b>Wholesale Trade (42)</b>	Comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Source: 2002 North American Industry Classification System (NAICS).

The industries included in the goods movement cluster are significant contributors to Indiana's economy. According to the Bureau of Economic Analysis, the goods movement industries directly accounted for 245,000 jobs in 2006, about eight percent of all employment in Indiana (or about 1 in 13 of the State's jobs). Table 4.2 summarizes employment levels for each of the six industries in the goods movement cluster. The wholesale trade industry accounts for the majority of employment within the cluster (135,000 jobs or 55 percent of the cluster total). The truck transportation industry is the second largest goods movement industry with 29 percent (71,000 jobs) of total employment, followed by warehousing and storage with 10 percent (25,000 jobs). Indiana's trucking industry is particularly large, accounting for about 2.4 percent of the State's total employment, far more than its 1.5 percent share of all the nation's jobs. This concentration reflects Indiana's position at the center of the U.S. Interstate system and its proximity to the country's largest industrial and consumer markets, providing a well-situated staging point for the trucking industry.

**Table 4.2 Employment in Indiana's Goods Movement Industry Cluster**  
*Jobs (in thousands)*

Industry	1997	2006	Percent Change
Wholesale Trade	130.1	135.0	3.8%
Air Transportation	6.6	6.1	-7.6%
Rail Transportation	6.2	5.5	-11.3%
Water Transportation	2.2	NA	N/A
Truck Transportation	65.7	71.3	3.8%
Warehousing and Storage	15.2	24.6	61.8%
All Goods Movement-Related Industries	219.8	244.7	11.3%

Source: 2006 Bureau of Economic Analysis.

Emblematic of an overall growth period for the U.S. economy, Indiana's GSP grew significantly over the past decade and this has included the State's goods movement industry cluster (Table 4.3). Between 1997 and 2005, the combined GSP (the value of goods and services produced) of Indiana's goods movement industries increased by 39 percent from \$16.2 billion to nearly \$22.6 billion. Despite this increase, the goods movement cluster did not expand quite as fast as the overall state economy which grew by 41 percent during the period. The goods movement industries with the highest growth rates in GSP include warehousing and rail transportation, which grew by 96 percent and 58 percent, respectively, between 1997 and 2005. Combined, the goods movement industries accounted for over 9 percent of the Indiana economy in 2005.



**Table 4.3 Gross Product of Indiana's Goods Movement Industry Cluster**  
*In Millions of Dollars*

Industry Code Description	1997	2005	Percent Change
Wholesale Trade	\$11,507	\$15,787	37.2%
Air Transportation	\$431	\$409	-5.1%
Rail Transportation	\$637	\$1,003	57.5%
Water Transportation	\$205	\$265	29.3%
Truck Transportation	\$2,936	\$4,104	39.8%
Warehouse and Storage	\$503	\$984	95.6%
All Goods Movement-Related Industries	\$16,219	\$22,552	39.0%
<b>Indiana Total (All Industries)</b>	<b>\$168,115</b>	<b>\$236,357</b>	<b>40.6%</b>

Source: 2005 Bureau of Economic Analysis.

### *International Trade and Gateway Activity*

A portion of Indiana's goods movement industry's activities relate to transporting Indiana's manufactured and agricultural products to gateways for export and the operation of the State's international airports. Indiana's businesses rely on the State's rail, air, highway, and port infrastructure to help them reach international markets and participate in the increasingly global economy. Indiana is a key node within a global production, international trade, and transportation network that has been redefining how business is conducted and how goods are produced. The trend towards cross-border production, services, and transportation is expected to continue into the future.

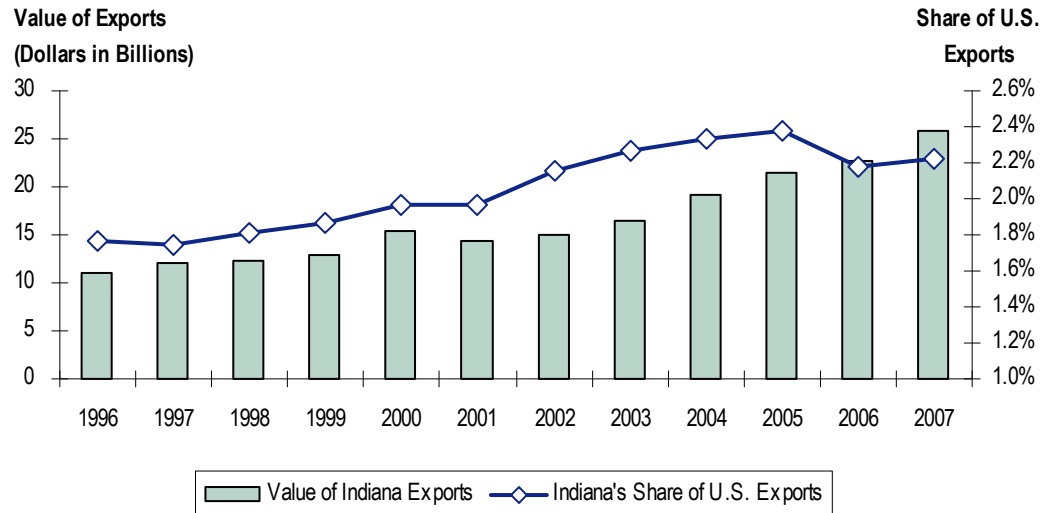
A clear linkage between globalization and freight can be measured in terms of increases in international trade. In Indiana, this can be illustrated by analyzing the importance of exports to the State's businesses (value of Indiana-origin exports), as well as by the volumes of freight handled by the State's principal international gateway (Indianapolis International Airport).<sup>18</sup>

Exports from Indiana to other countries have been on a steady growth trend since the national economic recession at the start of this decade (2001-2002). The total value of Indiana-produced exports experienced a sharp rise since the mid-1990s, growing from about \$11 billion in 1996 to \$15 billion in 2000. The period from 2000 through 2003 was relatively flat due to economic stagnation in Europe and Latin America and the strength of the dollar. However, now buoyed by declines in the value of the dollar relative to foreign currencies and demand for the State's advanced manufacturing goods (e.g., pharmaceuticals, medical

<sup>18</sup>Gary-Chicago International Airport also handles a small volume of international trade – valued at about \$31 million in 2007.

devices, technologically sophisticated transportation equipment), Indiana exports have since surged and hit a record \$26 billion in 2007 (see Figure 4.12). Indiana's share of total U.S. exports, 2.2 percent in 2007, has generally been trending upwards since the mid-1990s.

**Figure 4.12 Value of Indiana Exports**  
1996 to 2007



Source: U.S. Census Bureau and World Institute for Strategic Economic Research (WISER).

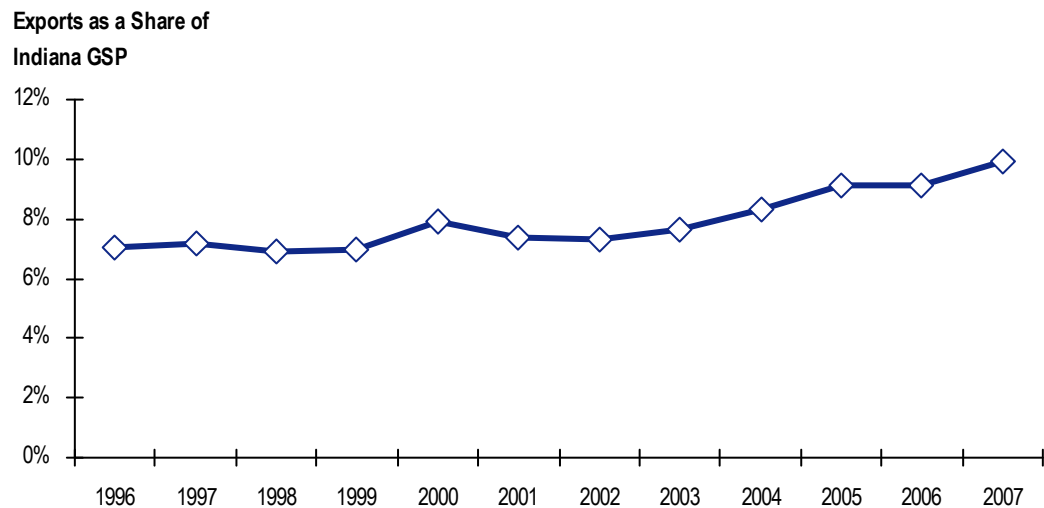
Indianapolis International Airport, by far the largest gateway for international trade located within Indiana, handled overseas goods valued at \$900 million dollars in 2007. Due to Indiana's inland location and proximity to large gateways just outside the State's borders (e.g., Chicago's air and port gateways handled \$107 billion in international trade in 2007), manufactured and agricultural goods made or grown in Indiana are generally shipped overseas from ports and airports located in other states. In 2007, 1.5 million tons of Indiana goods were transported to east and west coast ports (e.g., Los Angeles-Long Beach, New York-New Jersey, Norfolk, Philadelphia), by truck or rail, and then exported overseas. In addition, 72,000 tons of Indiana-made air freight was flown to international destinations throughout the world, with half this tonnage leaving through Chicago. With over half of Indiana exports bound for Canada and Mexico, however, land connections to such gateways as Detroit, Port Huron (Michigan), and Laredo (Texas) are critical for Indiana's trade.<sup>19</sup> Freight transportation services, whether trucking, rail, air, or barge, are crucial to the Indiana

<sup>19</sup> Indiana export data (value and weight) are from the U.S. Census Bureau and tabulated by WISERTrade, Holyoke Community College. The Census releases exports by weight for vessels and air only. Canada's and Mexico's share of state exports is based on value.

economy, providing Indiana-made products with access to primary U.S. trade gateways where they can then be transported to overseas' markets.

Due to an economy with strong manufacturing and agricultural sectors, the value of Indiana's exports are equal to about 10 percent of the Indiana gross state product, a figure greater than the 8 percent average for the United States. As can be seen in Figure 4.13, exports are gradually becoming a more important contributor to the Indiana economy. For a long period, 1996-2003, Indiana exports were equivalent in value to about 7 percent of the state economy. With the recent surge in exports, this has since increased to 10 percent in 2007. Longer term, international trade is anticipated to account for a growing share of the U.S. economy, a trend that will likely be replicated in Indiana which, today, is more export-intensive than the U.S. overall.<sup>20</sup> Increased trade translates to higher freight volumes and more demands being put on the rail, air, and motor carriers serving the State.

**Figure 4.13 Indiana Exports as a Share of Gross State Product**  
1996 to 2007



Sources: U.S. Census Bureau and Bureau of Economic Analysis; 2007 gross state product figure used in the calculation is an estimate.

Service sector (e.g., professional and business services, information, finance, healthcare, etc.) exports are not tabulated at the state level by Federal agencies, unlike more traditional (and tangible) manufactured, mined, and agricultural “merchandise” exports. While there is a clear link between Indiana’s merchan-

<sup>20</sup> The value of U.S. merchandise exports is expected to increase from 7 to 8 percent of gross domestic product today to approximately 18 to 20 percent of GDP by 2030 based on Cambridge Systematics’ analysis of Global Insight’s forecast for total U.S. trade.

dise exports and freight transportation (i.e., the State's exports of engines, motor vehicle parts, corn, and soy beans must be shipped to gateways and to overseas markets by truck, rail, air, or ship), it also must be emphasized that Indiana's services economy, accounting for more than 40 percent of gross state product, also depends on transportation, particularly air (for face-to-face meetings and for expedited shipments of materials) and trucks (for parcel service deliveries) in order to reach and to interact with suppliers and customers worldwide.

## **4.4 OUTLOOK FOR INDIANA FREIGHT-INTENSIVE INDUSTRIES**

In addition to the previously described goods movement industry cluster that is directly responsible for the transportation, handling, and distribution of freight, there are a number of industries that are: 1) key players in the Indiana economy; and 2) highly dependent on the efficient movement of freight to keep supply chains flowing, manage costs, and remain productive in very competitive national and global markets. In this section, the economic importance and trends of the industries that produce (and ship) or receive large volumes of freight shipments, both in terms of tonnage and value, are analyzed. These are the shippers that depend on Indiana's freight transportation network and services to transport their goods in the global marketplace, to stock their shelves with the latest products for Indiana residents and visitors, and to haul construction materials to keep pace with infrastructure, commercial, and residential building projects.

Within the Indiana economy, five specific industries were selected as being especially sensitive to the performance of the State's freight transportation system. These industries are:

- Manufacturing:
  - Motor vehicles and parts manufacturing;
  - Steel; and
  - Pharmaceuticals and medical equipment.
- Retail;
- Agriculture and food processing;
- Energy:
  - Coal production; and
  - Utilities.
- Construction:
  - Limestone.

All of the industries within this grouping are significant contributors to Indiana's economy. These industries account for 43 percent of Indiana's GSP and 38 percent of the State's employment.<sup>21</sup> Table 4.4 provides a breakout of the contribution of these industries to GSP and employment. Each of these industries requires dependable, efficient freight transportation service for inbound supplies and/or outbound products.

**Table 4.4 Contribution to Indiana Gross State Product and Employment for Freight-Intensive Industries**

Industry	Gross State Product (In Billions Dollars)	Employment (In Thousands)
Manufacturing	70.0	565.9
Retail	15.8	329.5
Agriculture and Food	5.2	105.1
Energy	5.8	17.6
Construction and Stone	11.0	152.7
<b>Total</b>	<b>107.8</b>	<b>3,046.5</b>
Total as a Percentage of Indiana GSP and Employment	43%	38%

Sources: Bureau of Economic Analysis and Bureau of Labor Statistics, 2006.

## Manufacturing Industry

Manufacturing has been the mainstay of the Indiana economy for decades, transforming from the mass production of steel and automobiles in the 20<sup>th</sup> century to today's production of high-value pharmaceuticals, medical equipment, and advanced motor vehicle components that keep Indiana at the forefront of cutting-edge technologies and modern production processes.

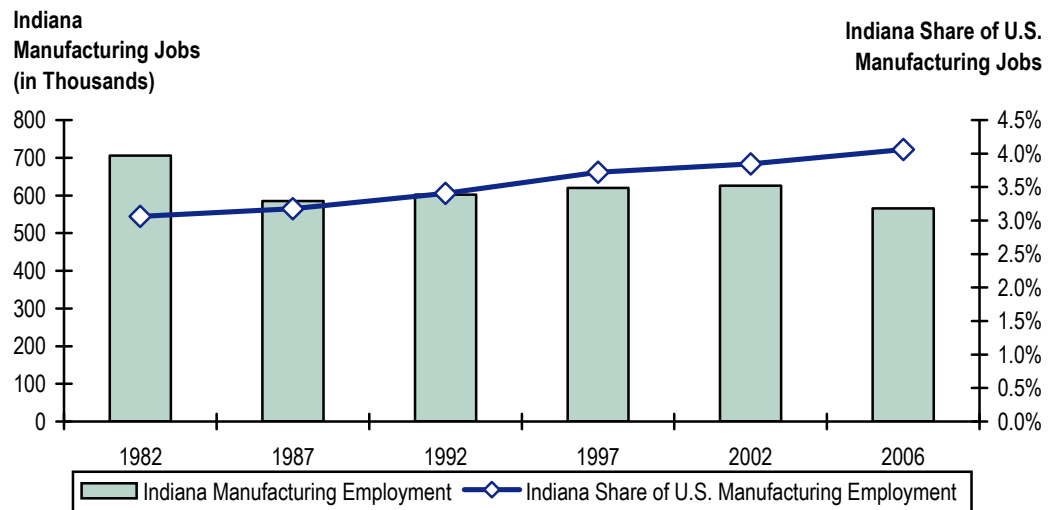
Indiana's manufacturing sector, today, employs approximately 565,000 people, accounting for 18 percent of all the State's jobs. By comparison, manufacturing accounts for only 10 percent of U.S. jobs. Manufacturing contributed \$70 billion to the Indiana economy in 2006, accounting for 28 percent of the gross state product. In 2006, manufacturing comprised 12.1 percent of the nation's gross domestic product – less than half the Indiana average. In fact, manufacturing is more concentrated in Indiana than any other state based on relative contribution to gross state product.<sup>22</sup>

<sup>21</sup>Employment is from the U.S. Bureau of Labor Statistics and is based on 2006 data. GSP is from the U.S. Bureau of Economic Analysis and is based on 2005 data.

<sup>22</sup>Following Indiana (28 percent), manufacturing accounts for 21 percent of the economies of Wisconsin and Louisiana.

As Indiana plans for the future of its freight transportation network, it needs to consider the substantial contribution of manufacturing to the state economy, a fact that can be obscured by years of declining jobs in the industry. While employment in the Indiana manufacturing sector has been *dropping* (similar to almost all other states), manufacturing output in Indiana has been *rising* (see Figures 4.14 and 4.15). Indiana manufacturers have invested heavily in automation and sophisticated process technologies, reducing their need for labor while maintaining and increasing output. The drop in manufacturing employment also reflects the internal restructuring of manufacturing firms. To lower costs and maintain competitiveness, and focus on core competencies, manufacturers have been outsourcing functions, such as human resources, payroll, maintenance, engineering, and logistics services. This has shifted employment from manufacturing to other sectors, notably the service sector, which has seen continuing increases in employment. The number of manufacturing jobs in Indiana declined by 16 percent between 1997 and 2006, but manufacturing output, measured in the value of goods produced, increased by 18 percent over the same period.<sup>23</sup>

**Figure 4.14 Manufacturing Employment in Indiana**  
1982 to 2006



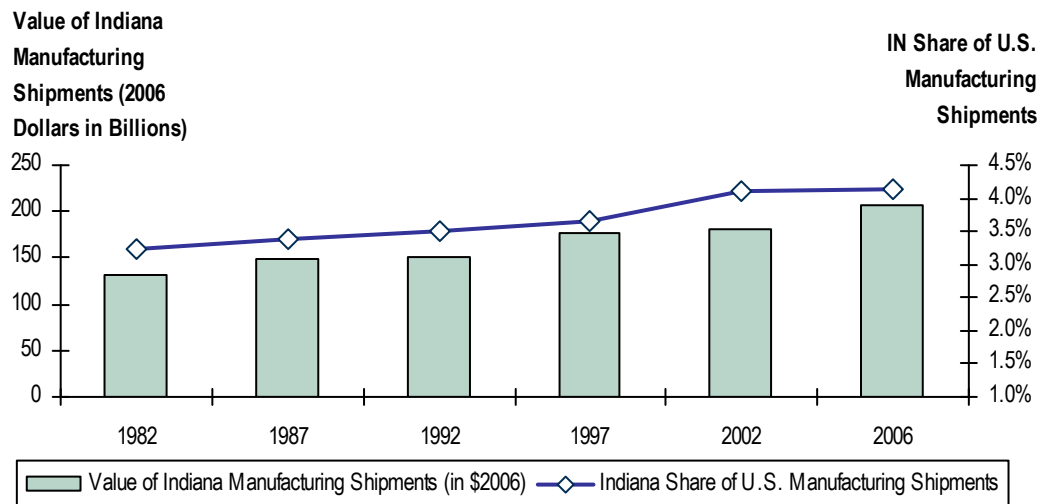
Source: U.S. Census Bureau, Census of Manufactures and Annual Survey of Manufactures.

Indiana's role within the broader U.S. manufacturing sector is increasing in importance. As can be seen in both Figures 4.14 and 4.15, the State's share of manufacturing jobs and output is rising. Although manufacturing jobs in Indiana have been going down for decades, the rate of this decrease is less than what is happening in the rest of the nation. For this reason, Indiana's share of

<sup>23</sup>Bureau of Economic Analysis, manufacturing GDP growth adjusted for inflation.

U.S. manufacturing jobs has actually increased from 3.0 percent in 1982 to 4.0 percent in 2006. During the same period, Indiana's share of the nation's manufacturing output rose from 3.2 percent to 4.1 percent, as the value of shipments produced by the State's manufacturers reached \$208 billion in 2006, up by 57 percent (in real terms) from \$152 billion in 1982. This growth was fueled by the motor vehicles and motor vehicle parts and chemicals (includes pharmaceuticals) industries.

**Figure 4.15 Value of Indiana Manufacturing Shipments**  
1982 to 2006



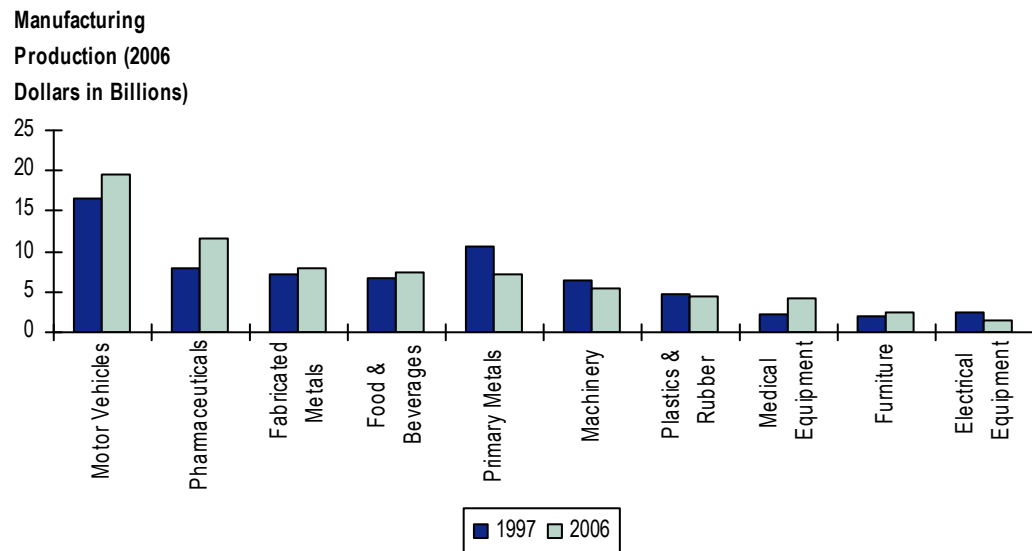
Source: U.S. Census Bureau, Census of Manufactures and Annual Survey of Manufactures.

Looking at Indiana's manufacturing performance over the last decade, the State's improvements are broad-based. In real terms, manufacturing output increased in each of the State's four largest manufacturing industries (see Figure 4.16) – motor vehicles and parts, pharmaceuticals, fabricated metals, and food processing – between 1997 and 2006.<sup>24</sup> Output also surged within the quickly emerging medical equipment industry, rising by 88 percent, from \$2.2 billion in 1997 to \$4.2 billion in 2006. Although Indiana continues to rank among the top three states in the manufacture of steel,<sup>25</sup> the value of the state's steel production actually declined between 1997 and 2006 as a result of foreign competition and a period of consolidation within the industry.

<sup>24</sup>Due to the conversion of the U.S. industrial classification system from SIC to NAICS codes, industry-specific data from the Economic Census and Annual Survey of Manufactures prior to 1997 is not directly comparable to more recently released data. For this reason, the industry-specific comparison is for the 1997-2006 period.

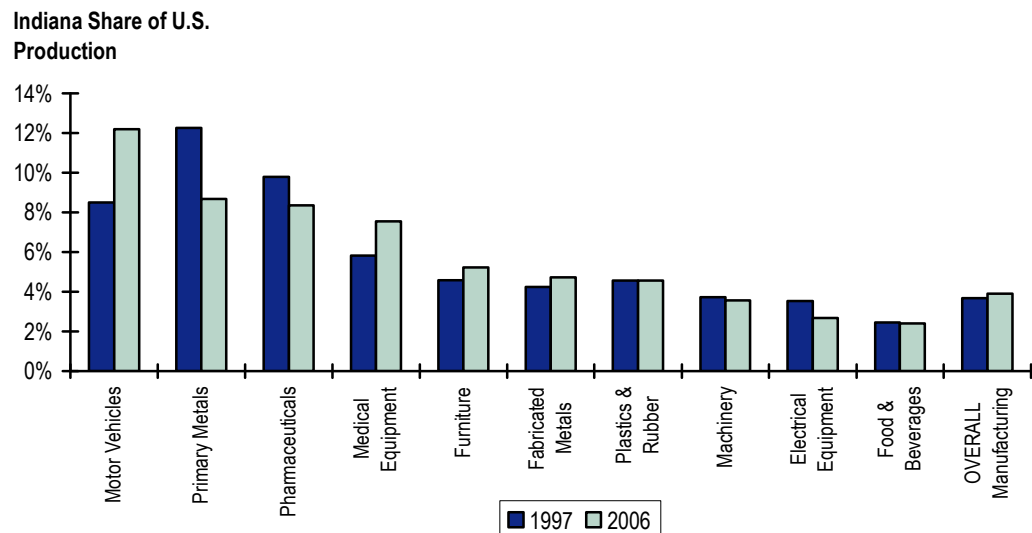
<sup>25</sup>The value of Indiana primary metal shipments is essentially the same as Ohio's and Pennsylvania's – these three states are far ahead of all other states in steel production.

**Figure 4.16 Value of Indiana Manufacturing Production by Industry**  
1997 to 2006 (In 2006 Dollars)



Source: U.S. Census Bureau, Census of Manufactures and Annual Survey of Manufactures.

**Figure 4.17 Indiana's Share of U.S. Production by Manufacturing Industry**  
1997 to 2006

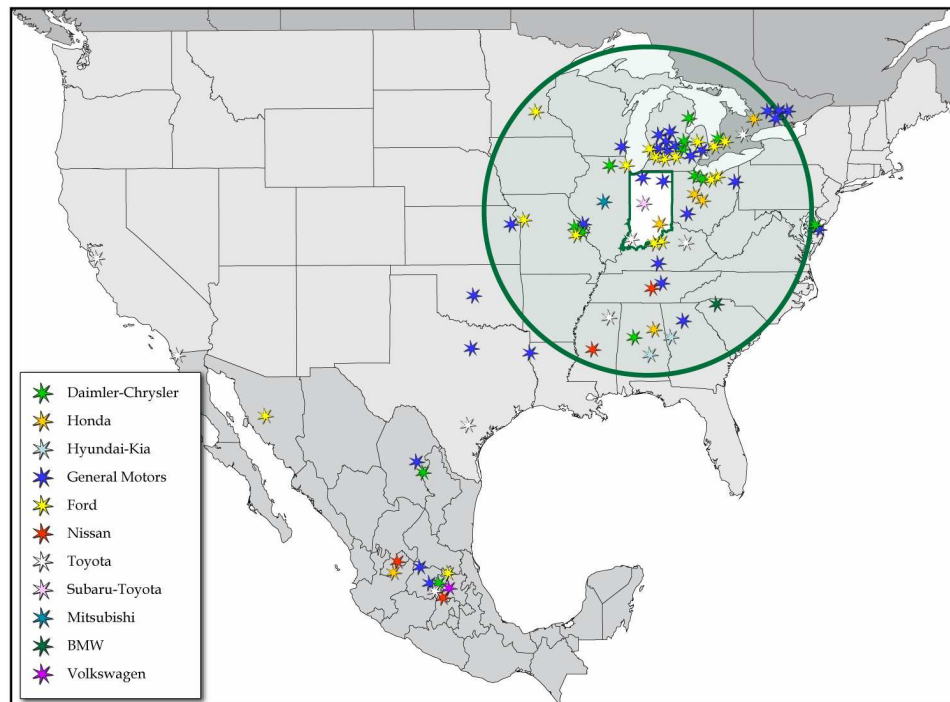


Source: U.S. Census Bureau, Census of Manufactures and Annual Survey of Manufactures.



Indiana's recent increases in U.S. manufacturing share have been led by the motor vehicles and medical equipment industries (see Figure 4.17). Between 1997 and 2006, the State's share of the nation's motor vehicle-related production increased from 8.5 percent to 12.2 percent while its share of medical equipment output rose from 5.8 percent to 7.6 percent. Indiana's motor vehicle industry has been fueled by the opening of a Toyota assembly plant in Princeton in 1998, increased production at the Subaru-Toyota facility in Lafayette, a new Hummer facility in Mishawaka, and the success of large suppliers, including Cummins in Columbus (diesel truck engines and power generation equipment), in competing in both the U.S. and world markets. Honda's recent decision to open an assembly plant in Greensburg, in southeastern Indiana, underscores the State's preeminent position within the motor vehicles industry. By 2011, Indiana assembly plants are expected to turn out more than 1 million vehicles per year.<sup>26</sup> Geographically, Indiana is situated at the heart of North American motor vehicle production (Figure 4.18), and is within a one-day truck drive to dozens of assembly plants in the Midwest, Canada, and the U.S. Southeast.

**Figure 4.18 Indiana Is at the Center of North American Motor Vehicle Production**



Source: Automotive News.

<sup>26</sup>Center for Automotive Research, Ann Arbor, Michigan. By 2011, Indiana will assemble more finished vehicles than any other state except Michigan and Ohio.

While there is no doubt that Indiana has been affected by competition from other countries, the State's manufacturing sector has continued to thrive due to the State's ability to retain, grow, and attract technologically advanced manufacturers. However, Indiana's manufacturers must strive to stay in front of competitors from lower-cost countries, which will put price pressure on manufactured goods. Indiana manufacturers are succeeding through the adaptation of technology and quality in conjunction with aggressive efforts to control costs.<sup>27</sup>

Transportation is a key contributor to manufacturer competitiveness and these trends have several implications for Indiana's freight transportation system. First is the need to maintain flexible and reliable transportation services that efficiently connect Indiana manufacturers with customers and suppliers.

What ties Indiana's manufacturing capability together today is trucking and the State's roadway system. Trucks and highways are the backbone of manufacturing logistics. The manufacturing sector makes extensive use of intermodal rail, water, and air cargo services, but it is trucking and the highway system that provide manufacturers with the capability to access a wide range of materials, labor, technology, and markets, and to integrate these elements into cost-effective, just-in-time manufacturing operations. Trucking and the highway system have allowed manufacturing to have door-to-door freight service, as well as direct access to international trade gateways. Indiana's trucking services and highway system must have the capacity to deliver freight reliably and at stable or lower costs to keep the State's manufacturing sector competitive. Underlining the importance of roadways to manufacturers, the overwhelming majority of business expansions in Indiana are within five to seven miles of an Interstate, and Interstate access is considered absolutely essential to the viability of a site.<sup>28</sup> Today, low congestion levels compared to neighboring Illinois and Ohio are considered an advantage for the State's manufacturers.

Rail also is crucial to Indiana manufacturers, especially for shipping heavy goods (e.g., steel, limestone) and chemicals. While Indiana's rail links to the East Coast (and key international gateways) are considered excellent, rail moves to the West Coast are problematic as trains must often go through Chicago which slows down trips due to congestion. This adds to manufacturers' costs, potentially erasing the efficiencies and cost advantages of using rail. Improving the flow of rail traffic through the Chicago region or identifying alternative routes to the West Coast would add to the efficiency of Indiana's manufacturers by lowering costs and helping them reach distant markets more effectively.

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<sup>27</sup>For example, while other countries make cheaper steel for commodity markets, Indiana competes successfully in the manufacture of high-grade, specialized steels.

<sup>28</sup>Indiana Economic Development Corporation, interview.

## Retail Industry

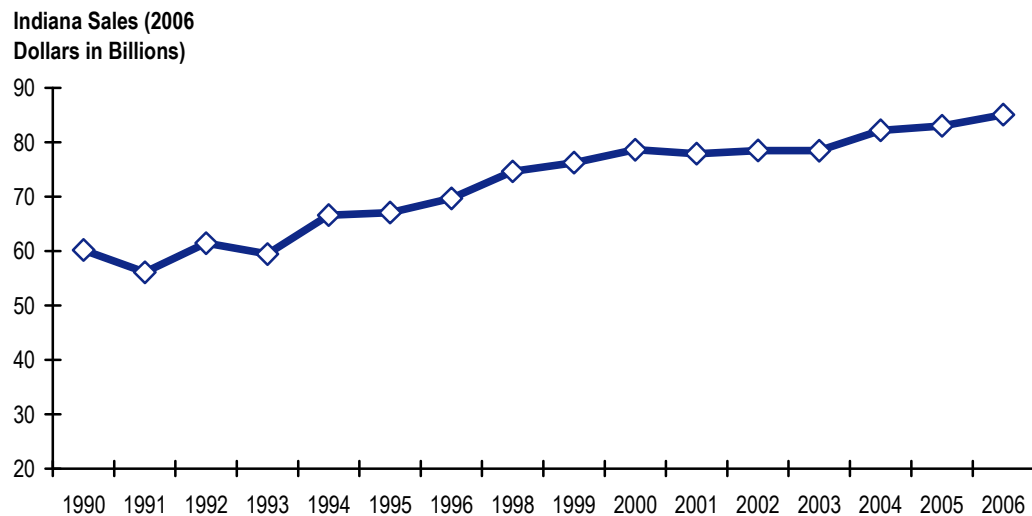
The retail industry comprises establishments that sell merchandise. Retailing is the final step in the distribution process, a process that includes manufacturing, wholesale trade, and transportation – all leading to the sale of merchandise, either through a store (e.g., “brick and mortar” retailer) or a nonstore retailer (e.g., catalog, Internet sales) to the general public.

Retail is the second largest industry sector in Indiana (essentially tied with healthcare), after manufacturing, when measured in terms of employment. Retail sales in Indiana (excluding food) reached \$85 billion in 2006. Measured in terms of GSP, retail makes up 6.3 percent of the total Indiana economy. The retail industry accounts for about 11 percent of Indiana jobs.

Growth in retail trade responds to the expansion of the economy, income, and population. Indiana’s long-term trend in these three indices suggests that retail sales in the State are likely to continue growing at a slow-to-moderate pace. Between 1990 and 2006, the value of total retail sales in Indiana increased, in real terms, from \$60 billion to over \$85 billion (see Figure 4.19). This type of trend is expected to be maintained in coming years.

**Figure 4.19 Retail Sales in Indiana, 1990 to 2006**

*In 2006 Dollars*



Source: Indiana Department of Revenue, “Indiana Total Taxable Sales.”

The movement towards on-line, nonstore retailing has been a significant trend in the retail industry. Nationally, sales via the Internet increased to three percent of total retail sales in 2006. While still a small portion of total sales, these nontraditional channels increase the need for freight services. Whereas most retail shopping is done by consumers driving their own cars to retail outlets, the growth of nonstore shopping increases the need for direct home delivery of parcels provided by FedEx, United Parcel Service, or the United States Postal Service.

The retail industry in Indiana, like the nation's, is characterized by the variety of products it delivers to millions of consumers. These products are brought to market through sophisticated logistics channels that put demands on Indiana's intermodal transportation system. Retail merchandise, today, is often imported through high-volume container port facilities through West and East Coast ports, and is then transported by rail and truck to regional distribution facilities, with several located in Indiana, including a growing concentration near Indianapolis International Airport. From these distribution facilities, the merchandise reaches retail shelves by truck.

Today, retailers strive to reduce fixed inventory as part of their cost-saving efforts. This operational strategy to minimize stock levels and optimize labor places tremendous pressure on the freight transportation system to carry inventory responsively and predictably. The reliability of deliveries to Indiana retailers depends on roadways and rail to function as planned.

Metropolitan congestion is an issue as it reduces reliability and increases delivery times, making it more difficult for retailers to assure that they have the right products on the shelves at the right time. While a relative lack of congestion is presently considered an advantage for Indiana businesses and retailers, travel delays make retail delivery a real challenge for consumer goods companies in other parts of the United States. Within Indiana, the effects of increasing congestion in metropolitan Indianapolis and outer Chicago and Louisville need to be monitored and addressed in order to maintain this competitive strength.

## **Agriculture and Food**

Agriculture and food are two interrelated industries. "Agriculture" represents the growing of crops (e.g., soybeans, corn, wheat) and the raising of livestock, while "food" represents the manufacture of the items commonly found on grocery store shelves (e.g., bread, juice, cheese, meat, soda, beer, etc.) other than fresh produce. Both agriculture and food use roadways, rail, and waterways for inbound materials, as well as to transport goods to more distant markets.

**Agriculture** – Indiana's agriculture industry is the 13<sup>th</sup> largest in the country, producing crops and livestock valued at \$6.9 billion in 2006. While the State ranks fifth in the country in terms of the number of hogs, Indiana's agriculture industry, based on value, is led by crop production (e.g., corn and soybeans). In 2006, the value of crops grown in the State reached \$3.9 billion, ranking Indiana ninth in the nation (see Table 4.5).

**Table 4.5     Market Value of Crops Sold**  
*Top 10 States, 2006*

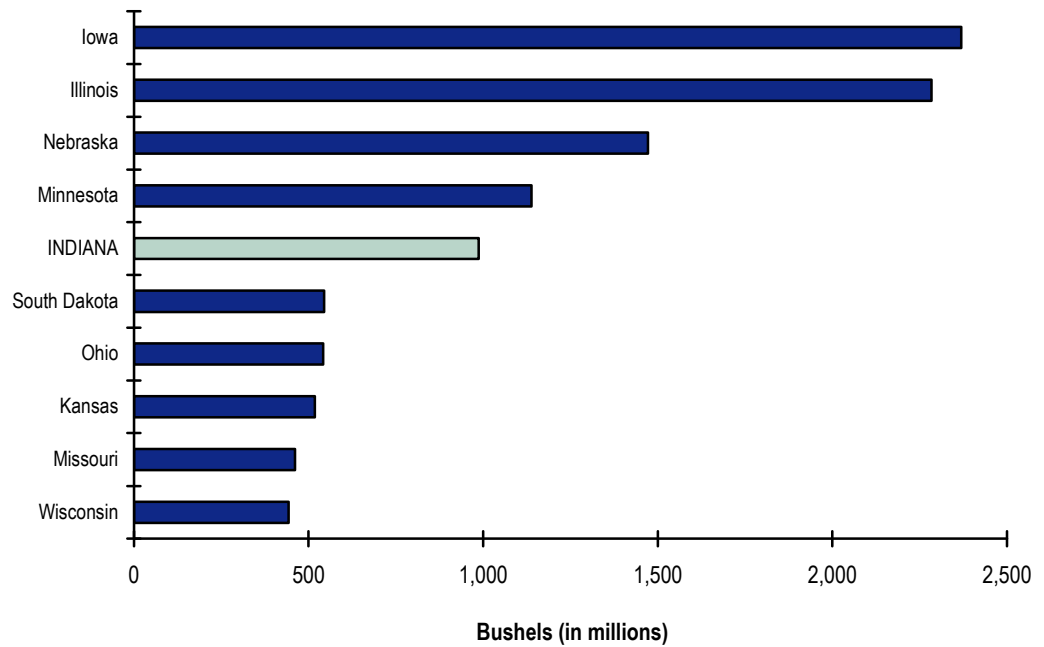
	Value (In Billions of Dollars)	Share of United States
California	23.7	20.1%
Illinois	7.2	6.1%
Iowa	6.9	5.9%
Florida	5.7	4.8%
Texas	5.2	4.4%
Minnesota	5.0	4.2%
Washington	4.5	3.8%
Nebraska	4.2	3.5%
<b>INDIANA</b>	<b>3.9</b>	<b>3.3%</b>
Ohio	3.5	3.0%
United States	118.0	

Source: U.S. Department of Agriculture.

Indiana, joined by Iowa, Illinois, Nebraska, and Minnesota, is one of the nation's top-tier growers of corn (Figure 4.20), with nearly one billion bushels grown in 2007. Historically, there has been a slight upward trend in Indiana corn production since 2000 and the State generally accounts for about eight percent of the nation's corn harvest (Figure 4.21). With the expanding use of ethanol which uses corn as its primary feedstock and increasing worldwide demand for corn as an animal feed, Indiana's corn production increased markedly in 2007. In early 2008, there were six ethanol plants operating in Indiana with an annual capacity of 455 million gallons per year. By the end of 2008, an additional 6 plants will open, more than doubling the state's ethanol production. This will be followed by another 6 plants that are expected to be completed by 2010.<sup>29</sup> These demand factors (animal feed and ethanol production) combined with higher prices being commanded by corn, are likely to push Indiana's corn harvest up in coming years. Corn is grown abundantly throughout most of Indiana, but the highest production levels are found in the northwestern (Benton, White, Montgomery, and nearby counties) and extreme southwestern parts (Knox County) of the State.

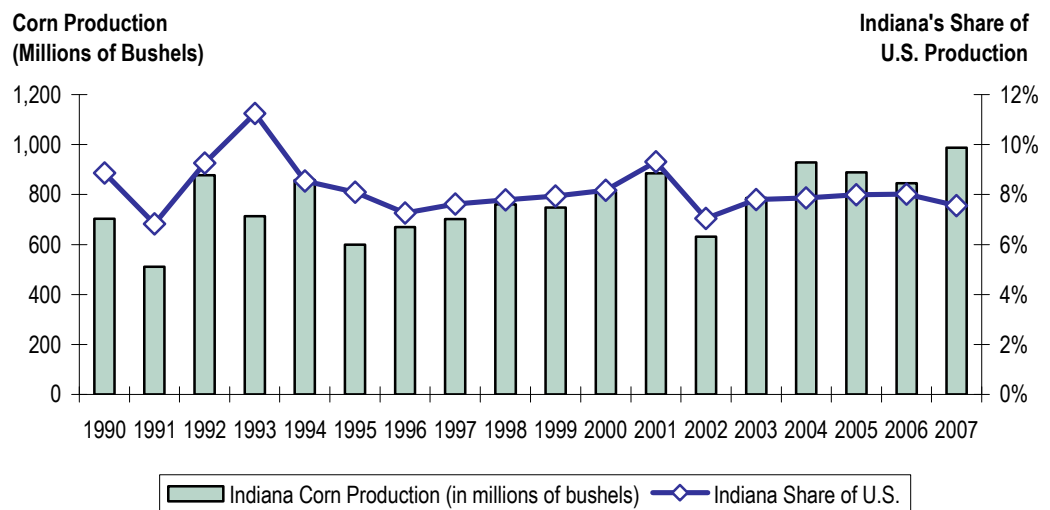
<sup>29</sup> Indiana Department of Agriculture.

**Figure 4.20 Top Corn Producing States**



Source: U.S. Department of Agriculture, 2007.

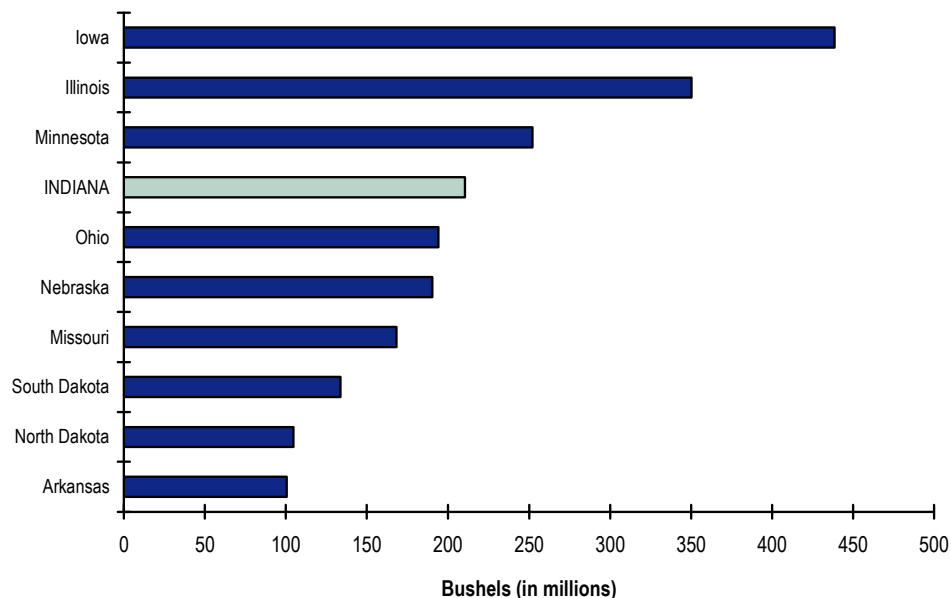
**Figure 4.21 Indiana Corn Production**



Source: U.S. Department of Agriculture, 2007.

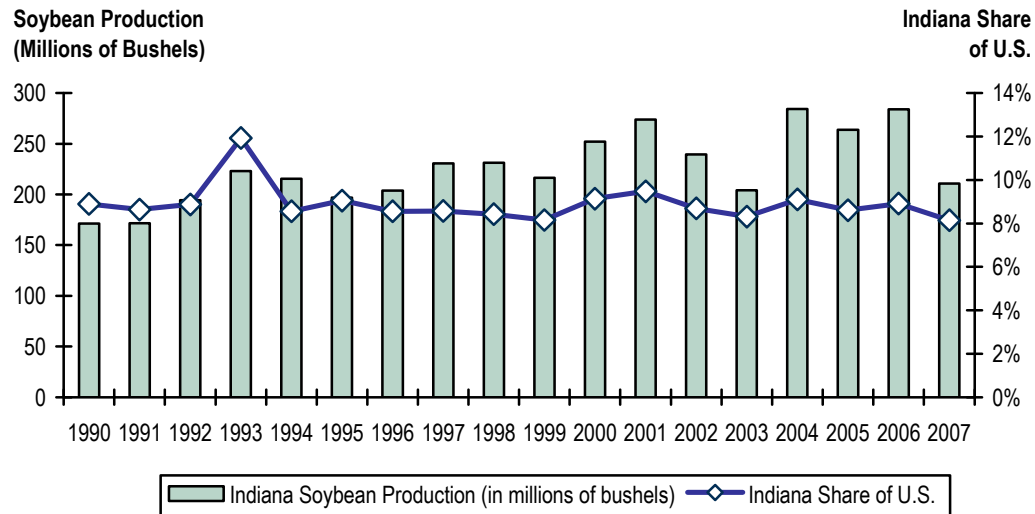
After corn, the other leading crop grown in Indiana is soybeans. Indiana ranked as the fourth largest grower of soybeans in the United States in 2007, following Iowa, Illinois, and Minnesota (Figure 4.22). Indiana's soybean harvest, however, fell to 211 million bushels in 2007 after reaching historic highs between 2004 and 2006. Indiana's soybean harvest has been trending slowly upwards since 1990 and generally fluctuates between 200 million to about 300 million bushels per year. Indiana's share of total U.S. soybean production, ranging from eight to nine percent (Figure 4.23) is similar to the State's share of the nation's corn harvest. Long term, demand for Indiana's soybeans will be stimulated by factors similar to those that are driving up production for corn – renewable fuels and worldwide demand for both corn and soybeans to be used as feeds or processed into food products. Five plants are currently operational in Indiana to refine soybeans into biodiesel fuel.<sup>30</sup> A plant in Claypool (Kosciusko County), opened in 2007, will be the largest biodiesel production plant in the world and will consume a large portion of the soybeans grown in Indiana. At the center of the nation's agricultural belt and with its manufacturing expertise, Indiana will continue to be an attractive state for developing renewable energy plants in coming years. These trends will encourage soybean and corn cultivation to increase in Indiana (and other midwestern states) in the future. Soybeans are grown throughout Indiana, with the largest concentrations of acreage and production located in the northern part of the State.

**Figure 4.22 Top Soybean Producing States**



Source: U.S. Department of Agriculture, 2007.

<sup>30</sup> Indiana Department of Agriculture.

**Figure 4.23 Indiana Soybean Production**

Source: U.S. Department of Agriculture, 2007.

**Food Products** – The value of Indiana’s food products output reached \$6.4 billion in 2006, ranking Indiana 14<sup>th</sup> among the states (see Table 4.6), and increasing by 39 percent between 1997 and 2006, a rate of increase similar to the national average. Food production is an important part of the Indiana economy, accounting for 7 percent of the State’s manufacturing output. Within the food industry, Indiana is a national leader in the milling of grain and oilseeds (rank #4), bakeries and tortillas (#10), and dairy products (#14).

Freight transportation plays a crucial role in Indiana’s food and agriculture industries. The agriculture industry ships goods that are heavy, bulky, and relatively low value per ton, and these products often must be shipped long distances to reach domestic and global markets. This means that transportation costs are a significant portion of the price of delivered shipments and products. For this reason, agricultural shippers stress the importance of lower-cost and reliable rail and barge transportation to maintain their competitiveness. Higher-cost truck transportation also is crucial for transporting key inputs (fertilizers, seeds, feed, etc.) to farms and to bring harvests to loading facilities, processing plants, and other markets.

In order to meet the nation’s growing demand for biofuels such as ethanol and biodiesel which are refined from corn and soybeans, Indiana’s road system must accommodate growing volumes of trucks carrying these feedstocks to the State’s ever-increasing number of refining facilities. The expansion of biofuel production and distribution capacity also has expanded the demand for longer-haul



truck and rail transportation to transport feedstock and refined fuels from Indiana to other parts of the country.

**Table 4.6 Top Food Processing States, 2006**  
*Value of Food Output, in Billions of Dollars*

State	1997	2006	Percent Change
California	16.6	24.9	50.0%
Texas	9.6	14.1	46.9%
Pennsylvania	9.1	13.8	51.6%
Illinois	12.3	12.9	4.9%
Ohio	8.9	10.3	15.7%
Georgia	6.3	10.2	61.9%
Iowa	7.0	9.5	35.7%
North Carolina	4.5	8.7	93.3%
Wisconsin	6.5	8.7	33.8%
Tennessee	4.2	7.4	76.2%
New York	6.0	7.1	18.3%
Arkansas	3.7	7.0	89.2%
Virginia	4.1	6.6	61.0%
<b>INDIANA</b>	<b>4.6</b>	<b>6.4</b>	<b>39.1%</b>
Minnesota	4.8	6.3	31.3%
United States	163.7	233.7	42.8%

Source: U.S. Census Bureau, Annual Survey of Manufactures.

Indiana and the Midwest for decades have been the breadbasket to the world, exporting huge volumes of grain to countries with inadequate tillable land or inefficient agricultural sectors. The value of Indiana agricultural exports reached \$2.1 billion in 2006 and has been growing substantially in recent years. Indiana's agricultural exports are the 10<sup>th</sup> highest in the nation. The State is the 5<sup>th</sup> ranking exporter of feed grains (includes corn) and is 4<sup>th</sup> in soybean exports. Indiana also is a top 10 exporter of poultry products, seeds, and live animals/meat. Freight access to the country's international gateways on the East, West, and Gulf coasts are crucial to the competitiveness of the state's agricultural exports.

Today, Indiana farmers are in head-to-head competition with growers around the world such as Brazil in soybean and corn exports. The condition of the State's transportation infrastructure and availability of transportation services, particularly rail, for transporting soybeans and corn reliably and cost-effectively is important to the competitiveness of Indiana's agriculture and food sector. Export competition and transportation's role are key considerations to Indiana's substantial agricultural industry. The efficient, reliable, and low-cost movement

of Indiana's agricultural commodities to coastal gateways will be a determinant in how well the State can compete in overseas markets in the future.

Rail is important for shipping grains for export, but the agricultural sector now finds itself competing with the retail industry and coal/electric power industries for space on the rail network. Smaller shippers are finding it hard to get specialized rail cars such as bulk hopper cars and to get reliable and timely service for small lot shipments. Without adequate rail service, agricultural shippers must shift to trucks, increasing their transportation costs and making them less competitive with major agricultural producers in Argentina, Australia, and Brazil. The price and availability of rail service may even influence where crops are grown in the future, a trend that may actually favor Indiana growers who have better and more accessible rail service than locations like northern Minnesota (where rail consolidation has resulted in reductions in service).

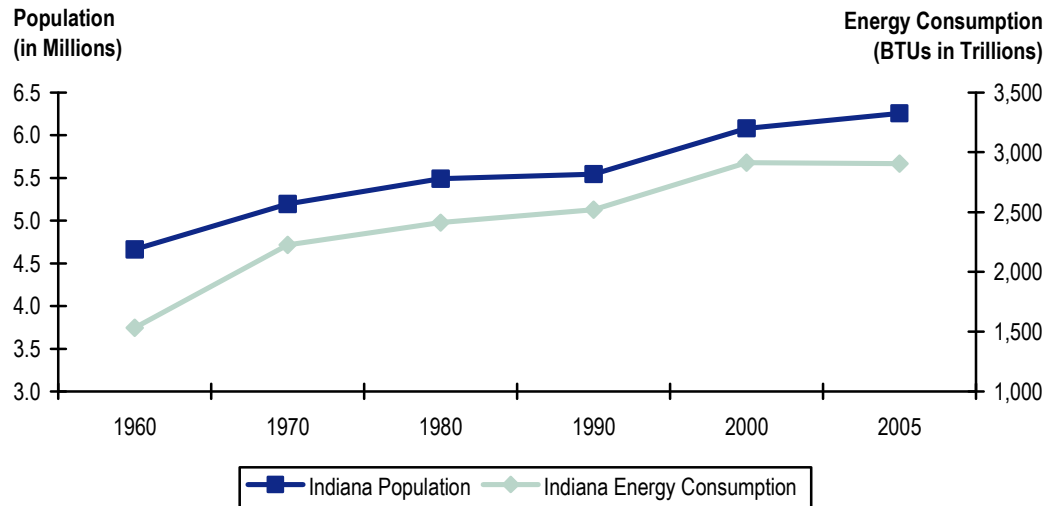
The Ohio River and inland waterway system also is very important to Indiana's agricultural industry as barges represent a low-cost alternative for shipping crops to the Gulf of Mexico for export, as well as for domestic distribution. Grain harvested in Indiana can be trucked to Ohio River barge ports (e.g., Southwind and Clark Maritime terminals) and then barged to New Orleans for international distribution. However, the aging inland waterway lock and dam system is affecting system capacity and reliability. The upkeep of the inland waterway system will be a factor affecting the cost of transporting Indiana's agricultural products.

## **Energy**

Electricity costs are a key business climate consideration that affects the site location decisions of prospective companies and also influences the willingness of local companies to expand. Businesses expect a reliable flow of competitively priced electricity (not only do blackouts or brownouts bring work to a halt, but they also can destroy production runs in some industries such as plastics products). Electricity expenses also are a factor affecting the overall cost of living in Indiana and the State's attractiveness to residents. Efforts to lower the costs of electricity, including the costs of transporting energy to markets, have a positive impact on Indiana businesses and residents, alike. Due to the intensive use of coal to generate electricity and the commensurately high coal volumes hauled on Indiana railways, the link between freight transportation and energy production is clear.

Indiana's total energy consumption (includes fuels used for all uses) in recent decades has grown proportionately with the State's population (see Figure 4.24). If this relationship holds into the future, Indiana's energy supplies will need to grow to meet the State's projected increases in population. To satisfy its energy needs, Indiana will either need to add generating capacity within the State or import more electricity from other states. Eventually, Indiana's generators will need to increase production and more power plants will need to be built.

**Figure 4.24 Energy Consumption and Population Growth in Indiana**  
1960 to 2005



Sources: U.S. Department of Energy and U.S. Census Bureau.

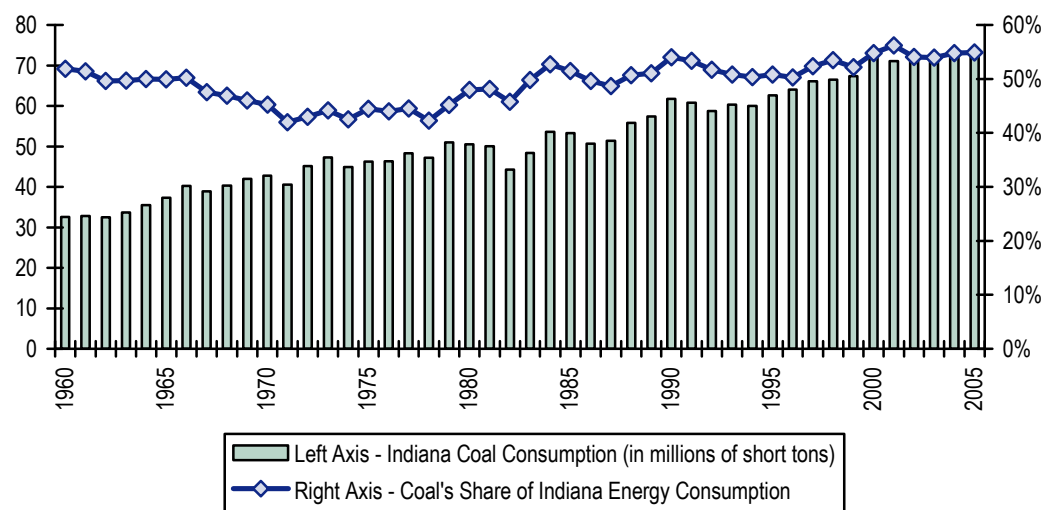
The transport of fuels (i.e., coal and petroleum) by rail is one of the leading inputs in the energy industry. Rail, joined by coal and petroleum commodity purchases, construction, and business services (e.g., engineering and environmental services) is a principal cost factor in electricity production that affects the overall price of energy. By keeping rail costs competitive, in combination with the other cost factors, Indiana can continue to offer electricity rates that are not onerous to the State's businesses or residents. This is particularly important in supporting Indiana's thriving manufacturing sector, a large-scale consumer of power. Indiana's electricity costs are the ninth lowest in the nation, giving the State's manufacturers a cost benefit over most other locations, a strong advantage as the State competes worldwide for business.<sup>31</sup> Any significant rise in Indiana's electricity costs (e.g., one driven by much higher rail costs for transporting coal) compared to other states, however, would erode this significant economic advantage for the State.

Rail is the primary mode of transportation to bring coal into Indiana, and coal is the top commodity brought into Indiana, based on weight, by rail. In 2005, coal accounted for 47 percent (21 million tons) of all goods transported by rail with an Indiana destination. Because of its weight and the volumes required to sustain electricity production at power plants, rail and barge are the preferred modes for transporting coal.

<sup>31</sup>U.S. Department of Energy, Energy Information Administration, November 2007 (data are for 2006).

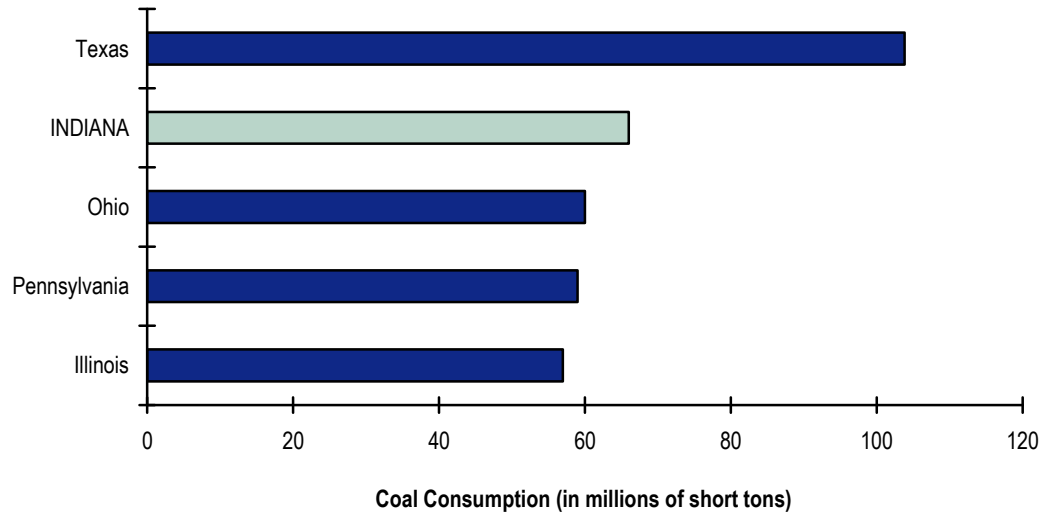
Coal supplies in Indiana and throughout much of the United States are plentiful and coal-fired power plants offer lower electricity rates than plants using oil or natural gas. Limitations on the development of nuclear and hydroelectric power plants, both low-cost sources of electricity, combined with new technologies that allow coal to be burned more cleanly, have made coal a popular fuel choice for expanding electricity production. If oil and gas prices continue rising as they have since 2004, the use of coal is likely to increase. In Indiana, the annual consumption of coal has increased from 33 million tons in 1960 to 73 million tons in 2005, the highest level on record. In 1960, coal accounted for 52 percent of the energy consumed in Indiana, but declined to 42 percent in 1979. Since the early 1980s, coal, again, has become a more important source of energy in Indiana. According to 2005 figures, it now accounts for 55 percent (see Figure 4.25), and is essential for fueling Indiana's 32 coal-fired power plants<sup>32</sup> and for making steel. In 2005, Indiana followed Texas as the largest consumer of coal in the United States (Figure 4.26).

**Figure 4.25 Indiana Coal Consumption**  
1960 to 2005



Source: Energy Information Administration.

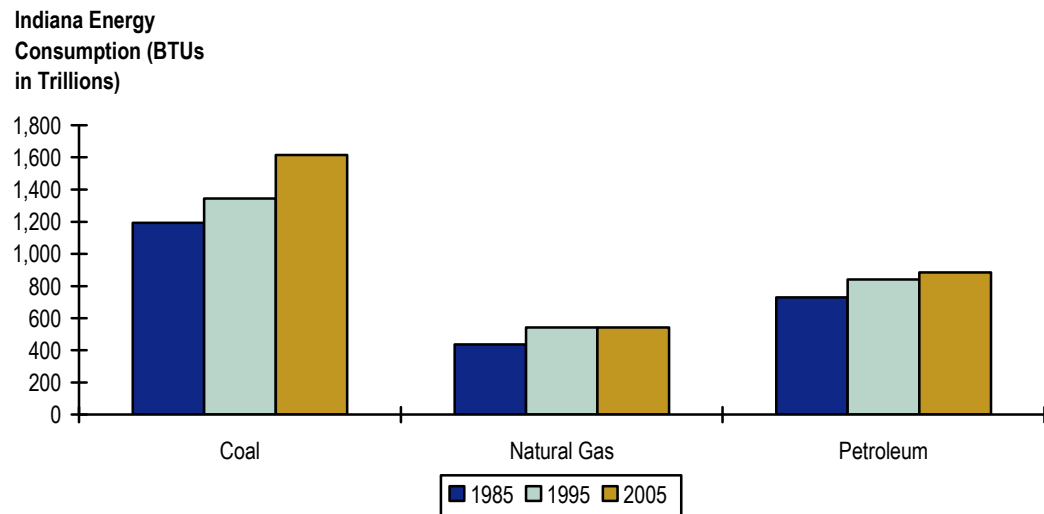
<sup>32</sup>Indiana Utility Regulatory Commission, 2008; includes 20 large plants (over 200 megawatts) and 12 smaller power generation facilities.

**Figure 4.26 Top Coal Consuming States**

Source: National Mining Association and U.S. Energy Information Administration, 2006.

In the future, Indiana will need more fuel(s) to meet demands for electricity generation as its population and economy continue to grow. It is anticipated that a portion of these fuel needs will be met by increasing the use of coal, and there is one large coal-fired powerplant currently under construction in Indiana (a 630 megawatt Duke Energy facility in Edwardsport, Knox County is expected to come on-line in 2012). Coal is the leading energy source in Indiana (see Figure 4.27). Higher coal consumption in Indiana will depend, in part, on the railroads' and the Mississippi-Ohio River system's ability to transport coal, particularly the low sulfur variety from Wyoming's Powder River Basin, into the State. Although Indiana mines significant quantities of coal, the State is a net importer of coal, notably from Wyoming, West Virginia, and Illinois. Current coal shipments into Indiana, today, come in predominantly by rail and by barge. Western coal can move by rail to the Mississippi River for transshipment to barges or directly to Indiana by rail. The difficulty in transporting coal from the mines in Southwestern Indiana to the power plants and industries in Northwest Indiana has subsequently contributed to the need to import a significant amount of coal from other states.

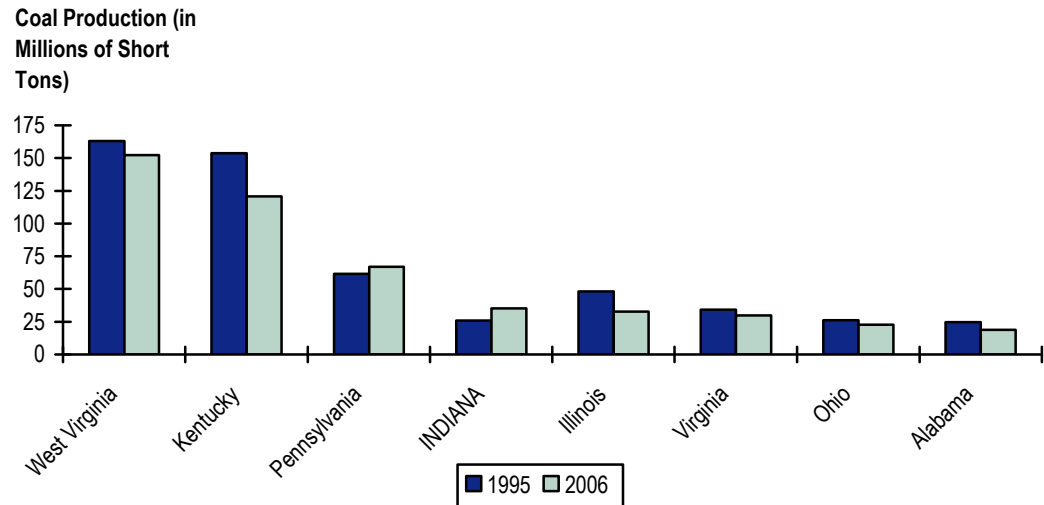
**Figure 4.27 Indiana Energy Consumption by Source**  
1985 to 2005



Source: Energy Information Administration.

Indiana has historically ranked as one of the larger producers of coal in the country and coal, as discussed above, is one of the leading commodities carried over the State's rail system. Indiana's coal production grew from 26 million tons in 1995 to 35 million tons in 2006, a 35 percent increase (Figure 4.28). Coal mined in the southwestern part of the State is transported by rail to utilities throughout the State and region (e.g., Ohio River Valley) to generate electricity. While the Illinois Basin variety of coal mined in Indiana is presently less favored by utilities due to its high sulfur content, its abundance (according to Purdue's Center for Coal Technology Research, Indiana has a 250-year supply of coal at current production rates) and the introduction of cleaner coal technologies are expected to increase its use in the future.

**Figure 4.28 Indiana Coal Production, 1995-2006**  
*Indiana Compared to Other Eastern Coal Producers*



Source: National Mining Association.

Ultimately, the decisions made in the next several years concerning how to meet Indiana's energy needs will have a bearing on the utilization of the State's rail and waterway systems. If clean-burning natural gas and renewable energies become the preferred option, the use of rail to transport coal is likely to go into gradual decline as older power plants become antiquated. The decisions made by Indiana's energy providers to address the State's future electricity requirements need to be monitored by policy-makers as they will have an effect on how the State's freight transportation system is used.

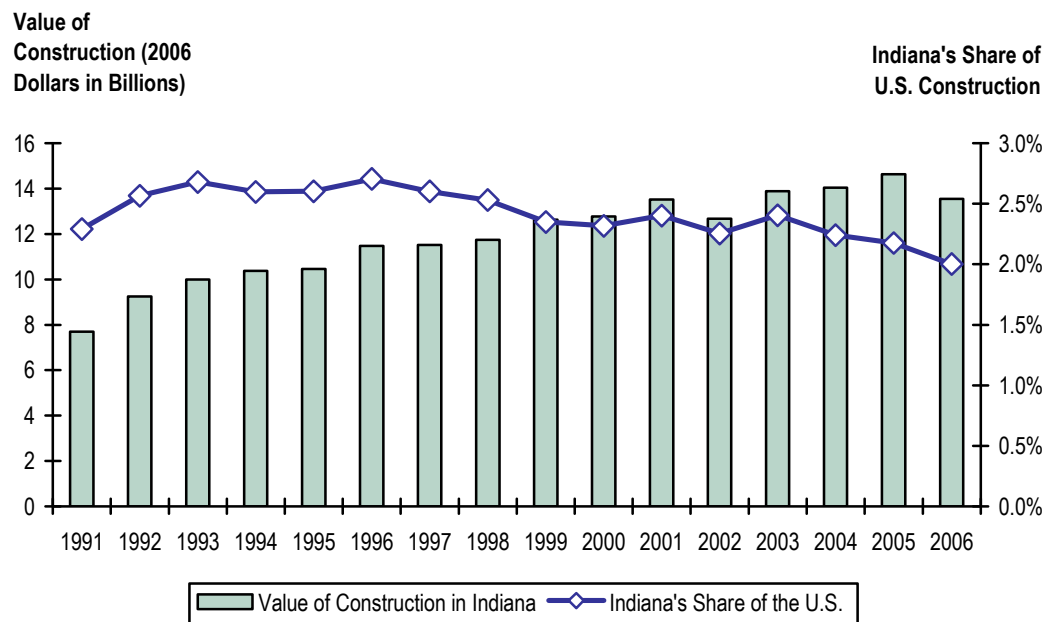
## Construction

There are two main drivers for growth in the Indiana construction industry: 1) economic expansion; and 2) population growth. Economic growth stimulates new investment in commercial structures such as office buildings, industrial facilities, warehouses, laboratories, etc., while a growing population translates to strong demand for housing, retail centers, schools, and other public infrastructure. Due to its central location, Indiana also benefits directly from overall U.S. growth which further encourages the construction of warehousing, distribution, and transportation facilities within the State to serve national markets. Recently, the expansion of the Indiana tourism industry also has been a boon for the State's construction sector, particularly for hotels in the Indianapolis area.

The construction industry, until recently, has been growing in Indiana. The total value of construction contracts in Indiana was \$13.5 billion in 2006, down slightly from record levels reached in 2005. Indiana generally accounts for between 2.0 percent and 2.5 percent of total U.S. construction (see Figure 4.29, showing the total value of Indiana construction and the State's share of national construction,

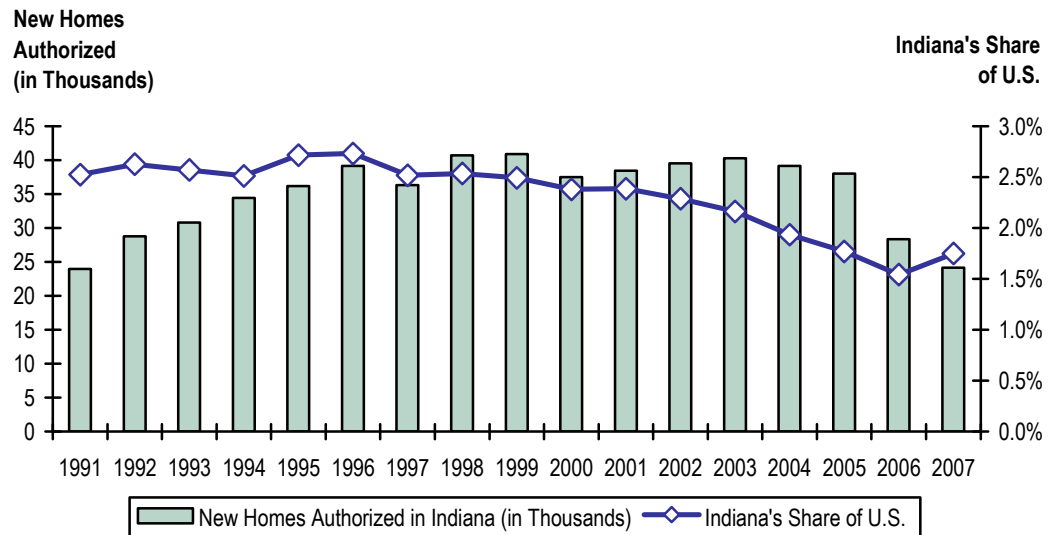
1991-2006). Indiana's share has declined somewhat since 2000 as Sunbelt states such as Florida received an inordinate amount of construction work, mostly for housing. The construction industry is a primary end user of a range of supplies, including lumber, aggregate, and steel carried by rail, trucks, and barges. The timeliness of freight deliveries is crucial to the construction industry, making transportation reliability a primary concern. Congestion and delays add hours and costs to deliveries needed by construction contractors. Some construction inputs are perishable (e.g., ready-mix concrete only lasts two hours before thickening) and missed shipments can lead to work stoppages. Although construction is sensitive to economic cycles, including the economic uncertainties being experienced presently, the overall future growth trend for construction in Indiana is likely to remain positive as the State's population and economy resume a long-term trend towards moderate growth. As evidence of the cyclical nature of construction, Indiana housing permits were down 15 percent in 2007 (Figure 4.30).

**Figure 4.29 Value of Construction in Indiana**



Source: McGraw-Hill Construction (copyright) as presented in Statistical Abstract of the United States.

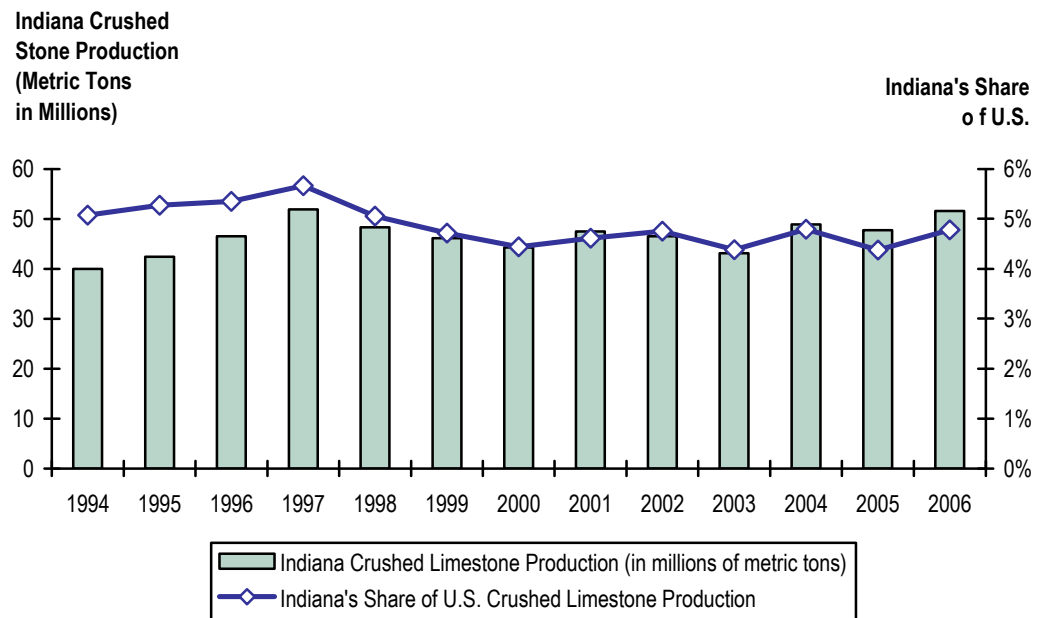


**Figure 4.30 New Homes in Indiana**

Source: U.S. Census Bureau.

Indiana quarries about 50 million tons of limestone per year, accounting for about five percent of the U.S. total (Figure 4.31). Shipments of Indiana limestone, gravel, and other stone are transported mostly by truck with much lower volumes carried by rail and water. Beyond its use as aggregate, the limestone produced in Indiana also is shipped nationwide and to markets throughout the world, including Italy, England, China, and Japan to be used as facing for buildings (“dimensional” limestone). Presently, Indiana dimensional limestone is being used to construct the new Yankee Stadium in New York City. Indiana’s quarries account for over two-fifths of U.S. production of dimensional limestone. Historically hauled by rail, Indiana dimensional limestone, due to its high value, is now mostly trucked long distances around the country (e.g., 300 truckloads to build a state office building in Harrisburg, Pennsylvania; 93,000 square feet to be hauled by flat bed trucks to build Yankee Stadium).

**Figure 4.31 Indiana Crushed Limestone Production**



Source: U.S. Geological Survey.

## 5.0 Freight Policies

Improving the freight transportation system is often not just a matter of direct investment in specific infrastructure but can be accomplished through understanding and addressing policy issues. These issues include organizational structures, planning and prioritization processes, funding mechanisms, laws and regulations, and inter-organizational communication, among others. Understanding the key institutional issues in Indiana will help in the recommendation of tools, methods, and strategies for integrating freight within Indiana's transportation planning and programming process.

The sections that follow present the existing structures and policies and recent and ongoing mandates that affect freight movement in the State of Indiana. These items highlight the evolving role of the public sector in planning, financing, and implementing freight improvement projects both in Indiana and across the nation.

### 5.1 ORGANIZATION AND PROCESSES FOR FREIGHT PLANNING

#### **INDOT Organization and Roles**

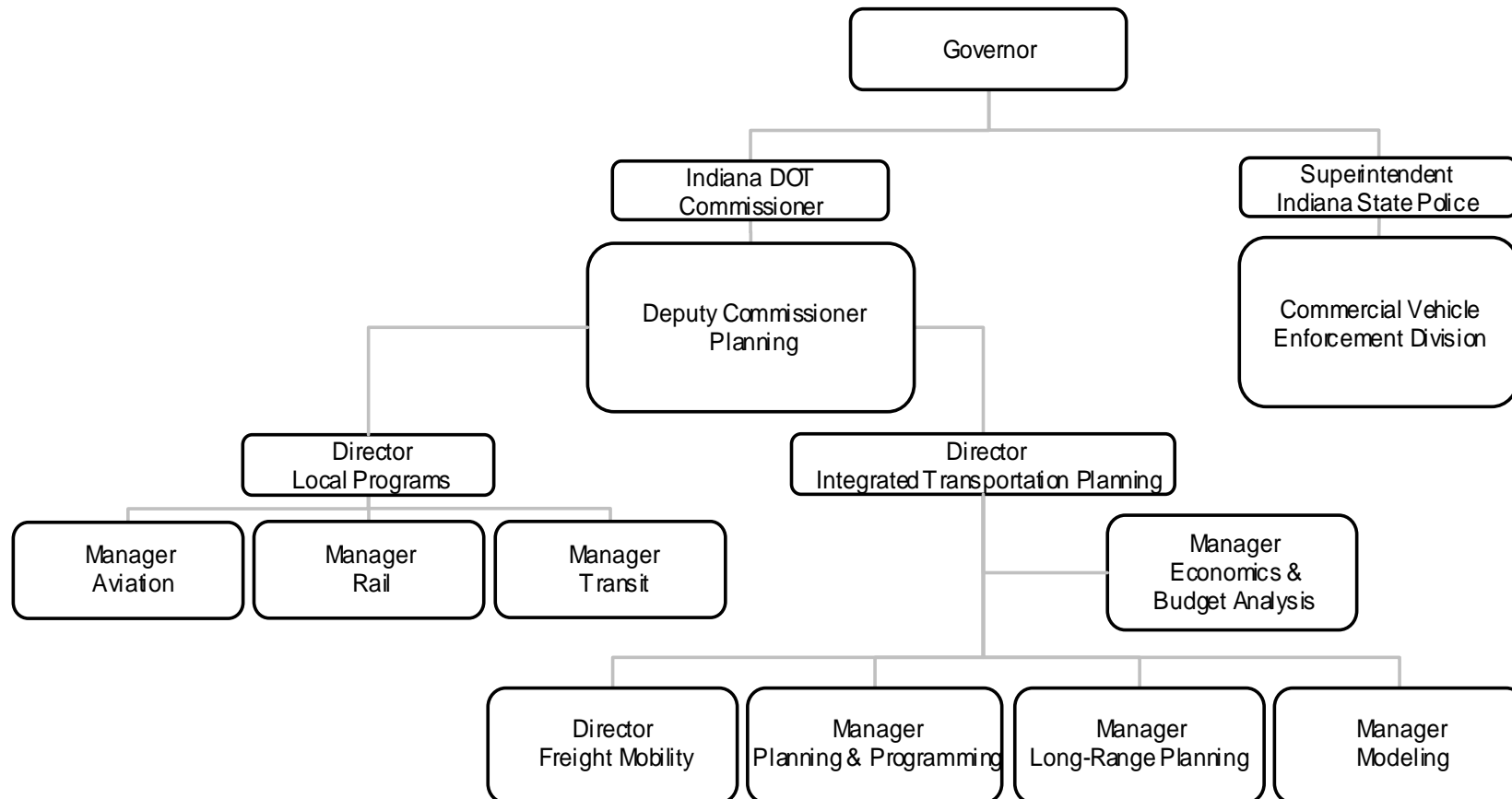
The Indiana Department of Transportation (INDOT) established the Office of Freight Mobility in late 2006. While the Office of Freight Mobility staff of one is small given the amount of work Indiana is pursuing, efforts are supported by long-range planning, modeling, and economics offices, as shown in Figure 5.1.

Information on freight issues is communicated with other divisions through regular interaction with roadway administrators, local funding offices, public affairs, and operations. The Office of Freight Mobility also interacts with the State's air and rail modal offices. The four staff in the Rail Office monitor rail safety and maintain state rail maps and other data. Federal and state rail crossing safety improvement funding programs are administered by the Office of Roadway Safety. The Office of Aviation's seven staff are involved in the functions of airport certification, construction project coordination, airport master planning, engineering, and grant administration.

The Office of Freight Mobility, which formerly was associated with operations, maintains contact with this function through communications with the Operations Support Division. The Office of Freight Mobility also provides regular updates to upper management on progress. Enforcement of freight-related issues such as truck size and weight, hazardous materials, and safety is managed by the Indiana State Police.

As Indiana has recently made great strides with funding its transportation program through the Major Moves Program, more projects that impact goods movement have the active involvement of the Office of Freight Mobility, including those that are not traditionally considered “freight projects.”

**Figure 5.1 INDOT Freight Responsibilities**



## INDOT Freight-Related Planning

Recent and ongoing freight planning activities conducted by INDOT include:

- *Transport Flows in the State of Indiana: Commodity Database Development and Traffic Assignment (1997)* – This study was undertaken to create a database of commodity flows into and out of Indiana counties and to allocate this commodity traffic to the State’s transportation network.
- *Intermodal Management System Study (1997)* – This study focused on developing transportation improvements to link intermodal facilities to Indiana’s portion of the National Highway System. The study identified 41 intermodal facilities of national or statewide significance, evaluated and prioritized deficiencies and developed actions and strategies to improve the overall performance of Indiana’s transportation system.
- *Indiana Rail Plan (2002)* – This study detailed the importance of the State’s rail freight system to Indiana’s economy and the need to capitalize on the benefits while addressing the challenges associated with the State’s rail industry.
- *INDOT Market Research Project, Perspective on Freight Stakeholders (2004)* – This research identified concerns of major shippers and carriers for consideration in the statewide planning process, and provided initial recommendations to INDOT regarding the integration of freight and goods mobility issues in the statewide plan.
- *Freight Flows of Indiana (2006)* – This update to the 1997 *Transport Flows in the State of Indiana* study used commodity flow survey data to create a model for estimating the production and attraction of freight flows in Indiana for 2015 and 2025.
- *Freight Component of the Indiana Statewide Travel Demand Model (ISTDM)* – Using *Freight Flows of Indiana* data, supplemented by other data, this component of the ISTDM estimates origin-destination truck flows by commodity for current and forecast years and assigns these trucks to the highway network.
- *INDOT 2030 Long-Range Transportation Plan (2007 Update)* – This plan identifies transportation projects needed through 2030.
- *Indiana Multimodal Freight and Mobility Plan* – This project, completed in May 2009, uses the ISTDM, other available data, and stakeholder input to perform a comprehensive analysis of the current and future freight transportation system in Indiana. It identifies gaps and needs, proposes solutions, provides a methodology for evaluation of freight projects, and establishes an implementation plan.
- *I-70 Dedicated Truck Lanes Study (starting June 2009)* – U.S. DOT selected this project, led by Indiana, as one of six “Corridors of the Future” for further study. This multistate study covers nearly 800 miles and involves participation by

Ohio, Indiana, Illinois, and Missouri. This project is discussed in further detail below.

The future of freight planning in Indiana will rely on coordination with transportation counterparts in neighboring states. Accordingly, Indiana is leading or partnering several ongoing projects. Multistate projects include the I-70 Dedicated Truck Lanes study mentioned above; Illiana Expressway Feasibility Study with Illinois; I-69 Corridor of the Future project from Texas to Michigan; Ohio River Bridges (I-65 and I-265) between Louisville, Kentucky and Jeffersonville, Indiana; and U.S. 24 “Fort to Port” with Ohio.

Indiana also is active in the Mississippi Valley Freight Coalition, a research-oriented group of 10 states in the northern Mississippi Valley, which cooperates in the planning, operation, preservation, and improvement of transportation infrastructure in the region, including interstate corridors, rail infrastructure, and inland and Great Lakes waterways. Similarly, Indiana is active in AASHTO’s Mississippi Valley Conference, which has a broader transportation focus but includes freight.

## **Metropolitan Planning Organization Roles**

Within Indiana, 14 metropolitan planning organizations (MPOs) conduct regional transportation planning. The Indiana MPO Council, comprised of Indiana MPOs, meets monthly to discuss common planning issues, including freight. INDOT has a seat at the table during these discussions and ensures MPOs have a voice in state freight planning efforts. The statewide MPO community is beginning to increase its emphasis on freight, as indicated by their focus on freight at the 2008 Indiana Statewide MPO Conference. In addition, the Council has provided freight-related technical training on planning issues, and there are plans to establish a Freight Subcommittee of the MPO Council in the near future.

As part of this Indiana Multimodal Freight and Mobility Plan, extensive outreach was conducted with non-INDOT transportation stakeholders, including the MPOs. Eleven of Indiana’s MPOs were interviewed as part of this process.

The majority of Indiana MPOs do not have a designated freight planner. For those agencies that do have a staff member working consistently on freight, that person generally works less than full time on the issue. Some agencies noted that relatively few freight issues exist in their region, which results in less freight planning emphasis. Others such as the Indianapolis MPO are located in areas that handle significant freight movement but do not have sufficient staff resources to dedicate time to freight. According to a 2003 Association of Metropolitan Planning Organizations (AMPO) survey of MPOs nationwide with a mean staff size of 15 and median staff size of 6, 22 percent of responding organizations had 1 or more staff persons dedicated to freight.

MPOs are split on directly addressing freight in their planning work products. Of the Indiana MPOs interviewed, five specifically addressed freight in their most

recent long-range transportation plans (LRTPs) or Transportation Improvement Plans (TIPs). Of the five directly addressing freight, only one included freight projects in its TIP: the Michiana Council of Governments (MACOG).

Most Indiana MPOs do not have an active freight advisory committee, with the exception of MACOG and the Ohio-Kentucky-Indiana Regional Council of Governments (OKI). In some cases, the freight advisory committee role is handled by an outside organization. The Northwest Indiana Regional Planning Commission (NIRPC) noted that the Northwest Indiana Forum took over the freight advisory council role partly because the MPO faced the challenge that many freight-related issues could not be discussed in a public forum. The Northeastern Indiana Regional Coordinating Council (NIRCC) noted that while it does not have a dedicated freight advisory committee, the Chamber of Commerce facilitates a group that includes shippers and carriers. According to the AMPO survey, nationally 18 percent of MPOs have an institutionalized freight advisory committee.

### **Private-Sector and Advocacy Group Involvement**

A number of groups have recently become increasingly active in promoting the economic benefits of the logistics industry and improved freight mobility in the State of Indiana.

#### *Central Indiana Corporate Partnership*

The Central Indiana Corporate Partnership (CICP) was created in 1999, with membership, including the largest manufacturers and university leaders in central Indiana. CICP provides input on economic policy, undertakes research activities, and develops strategies for corporate retention and attraction. It has undertaken several targeted initiatives such as BioCrossroads focusing on the life sciences industry and TechPoint to grow the technology sector.

In June 2007, CICP launched the Conexus Indiana initiative to support advanced manufacturing and logistics in the State. The 11 board members of Conexus Indiana include corporate executives, logistics company owners, and leaders in manufacturing and education. One of the primary efforts underway by Conexus Indiana is workforce development in logistics and advanced manufacturing, in partnership with Indiana universities and community colleges. According to Conexus, nine of the top 11 statewide skill shortages in Indiana are in transportation, distribution, logistics, and manufacturing. The initiative hopes to build awareness of and interest in the well-paid and highly technical logistics and manufacturing jobs in the State. Additionally, Conexus Indiana seeks to enhance research and supplier networks for these industries.

Conexus also participates in the Indiana Logistics Council. The Council is a partnership between corporate executives and relevant state agencies, including INDOT, the Indiana Economic Development Corporation, and the Ports of Indiana. The Council convenes regularly to address infrastructure priorities,



public policy, and other issues supporting the common vision of moving freight in Indiana. The Indiana Logistics Council has formed three subcommittees focusing on the issues of workforce development, awareness, and infrastructure.

### *Purdue University NEXTRANS*

Purdue University's U.S. DOT Level V Regional University Transportation Center established NEXTRANS in August 2007 as a consortium of educational institutions in Illinois, Michigan, Ohio, and Wisconsin; public sector partners such as state DOTs and FHWA regional offices; and corporate members, including Association of American Railroads, Motorola, Navteq, and Honda. NEXTRANS is funded with \$13 million over three years from U.S. DOT and consortium partners. The focus of NEXTRANS is on intermodal freight transportation and logistics to address regional needs and economic opportunities. The group held its inaugural summit, *Exploring Partnerships for Innovative Transportation and Logistics Solutions*, in May 2008 with participation by INDOT, IEDC, business leaders, and educational partners.

### *Northwest Indiana Forum*

The Northwest Indiana Forum is a nonprofit regional economic development organization serving Lake, Porter, and LaPorte counties. The organization's mission is to enhance economic opportunities in Northwest Indiana by providing services to promote the creation and retention of quality jobs. Northwest Indiana Forum provides assistance, customized analysis and research, marketing programs, and legislative support to existing and potential businesses and industries.

### *Ports of Indiana*

The Ports of Indiana is a quasi-governmental organization that operates a state-wide system of ports, foreign trade zones, and economic development programs under the authority of the Indiana Port Commission, a seven-member bipartisan board appointed by the Governor. Indiana has three water ports: Burns Harbor in Portage, Port of Indiana – Mount Vernon, and Port of Indiana Jeffersonville.

For the past five years, the Ports of Indiana and Purdue University have convened a two-day logistics summit that draws between 400 and 500 leaders from industry, academia, public policy, and government to discuss securing Indiana's place in the supply chain. The Ports of Indiana maintains a web site promoting Indiana logistics (<http://www.indianalogistics.com/>) where it publishes the free annual *Indiana Logistics Directory*. The directory promotes Indiana's logistics assets, includes feature articles from major carriers and shippers and INDOT's Freight Office, lists logistics-oriented freight education programs, and provides a listing of carriers and freight facilities in the State.

### *Four Cities Consortium*

The Four Cities Consortium was a coalition comprised of the municipalities of East Chicago, Gary, Hammond, and Whiting in Northwest Indiana that banded together to minimize rail freight impacts to communities. These cities in northwest Indiana originally banded together to oppose the acquisition of Conrail by CSX and NS due to anticipated large increases in freight traffic through their communities.

The Four Cities Consortium negotiated settlement agreements with CSX railroad, including \$4 million worth of improvements to mitigate at-grade crossings. The mayors of the municipalities have changed local city ordinances to increase the fines to railroads for blocked at-grade crossings and assumed the power to prosecute tickets, which was previously held by the State and county and not consistently enforced.

The Consortium signed a settlement agreement in 2001 with CSX to move rail traffic from the CSX Barr subdivision with 27 road crossings through Hammond, East Chicago, and Gary to the grade-separated Porter Branch/IHB line. Once engineering work was completed to determine the upgrades needed for the reroute, particularly to the 11 bridges, the cost for improvements was determined to be six times higher than expected and the funding in place would not be sufficient. The project was then broken into three phases. NIRPC has approved Phase I funding of \$6.5 million for bridge construction through the Congestion Mitigation and Air Quality Improvement Program (CMAQ); however, it is likely that the Phase I funding will not be permitted to be expended until funding for the full project is secured<sup>33</sup>. The group also has advocated for new intermodal development opportunities that rail rerouting would present<sup>34</sup>.

### *Educational Institutions*

A number of Indiana colleges, universities, and community colleges offer educational programs related to logistics. The *Logistics Directory* published by the Ports of Indiana lists nine institutions offering logistics-oriented degrees. Educational offerings by the institutions include Bachelor of Science degrees in supply chain management, Master of Business Administration degrees with a major in supply chain operations, Bachelor of Science degrees in operations management with a focus on goods and services, and Associate of Applied Science in logistics management. As they market their programs to potential students, these institutions contribute to awareness of opportunities in the logistics industry.

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<sup>33</sup> NIRPC

<sup>34</sup> Interview with Justin Murphy, Murphy Law, representing Four Cities Consortium, September 15, 2008.

## **Project Identification and Prioritization**

### *Project Identification*

According to FHWA regulations, all state transportation planning is required to consider eight planning factors.

1. Support economic vitality of the United States, the states, metropolitan areas, and nonmetropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and nonmotorized users;
3. Increase the security of the transportation system for motorized and nonmotorized users;
4. Increase accessibility and mobility options available to people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements, state and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize preservation of the existing transportation system.

While only two of the factors directly mention freight, all the factors have a freight component, particularly the first factor promoting support of the economic vitality of the United States. Improvements that contribute to safe, efficient highway operations are critical for trucks using the roadways, as well as passenger vehicles. Similarly, an efficient rail system is important for both freight trains and passenger trains that share rail infrastructure.

INDOT undertakes a six-step Annual Program Development Process (APDP) to develop projects on the state highway system.<sup>35</sup> The APDP is the mechanism for adding new capacity projects to the long-range plan. Stages in the APDP are summarized below:

1. Issue “Call for New Projects” to all INDOT divisions, MPOs, and other agencies that provide input to both planning and programming.
2. Review project recommendations, validate needs and costs, prioritize projects statewide, and add projects to the program.

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<sup>35</sup>INDOT 2030 Long-Range Transportation Plan, Chapter 2.

3. Develop Directory of Highway Projects, which is a list of all state projects under development at INDOT. The list assumes no budget restrictions and flags new projects added since the last review cycle.
4. Develop State Transportation Improvement Program, INSTIP, which is a fiscally constrained list of statewide projects for Federal-aid obligations during the next four years.
5. Consult with MPOs on the draft fiscally constrained list of transportation projects and make modifications based on MPO input. MPOs use the final “agreed-to” list of projects in development of their Transportation Improvement Programs (TIP). MPOs submit draft TIPs to INDOT, FTA, and FHWA for review and approval.
6. Publish draft INSTIP and distribute to the public for review and comment at annual meetings in six INDOT districts. Make modifications based on any significant public comments, and publish final INSTIP. The INDOT long-range transportation planning section participates in the annual meetings and incorporates relevant input into updates of the 2030 Long-Range Transportation Plan.

Projects primarily with a safety benefit are developed via the Highway Safety Improvement Program (HSIP). HSIP projects are developed to address safety issues identified in the Federally required Strategic Highway Safety Plan (SHSP). HSIP projects are Federally funded under §148. Each year, as part of the HSIP process, each state is required to submit a “5 Percent Report” that describes at least five percent of the locations in each state exhibiting the most severe highway safety needs. This report must contain an assessment of potential remedies to the locations identified, estimated costs associated with these remedies, and impediments to implementation other than cost associated with those remedies. In 2007, the Indiana report identified 110 locations, including 96 intersections or interchanges and 14 segments. Locations are ranked using a Crash Loss Index indicating places where crash loss is higher than would be expected on similar facilities with similar exposure and by the number of fatal and incapacitating injury crashes. This annual analysis helps INDOT prioritize locations with the highest safety needs and develop safety projects.

The Indiana Strategic Highway Safety Plan (SHSP) required by SAFETEA-LU identified 13 emphasis areas requiring safety focus. Emphasis areas are defined by analysis of state crash data and may address crashes by infrastructure type, crash type, vehicle type, population at risk, or driver behavior. Two of the SHSP emphasis areas specifically address freight: 1) reduce large truck crashes; and 2) reduce crashes at highway-railroad crossings. Many other emphasis areas also apply to freight movement, such as reducing impaired driving, reducing roadway departure crashes, and reducing intersection crashes. For some strategies identified in the SHSP, infrastructure projects are developed in the HSIP. Implementation of other strategies in the SHSP may require legislative changes,

educational programs, or enforcement efforts that are addressed by other programs or agencies.

### *Project Prioritization*

The long- and short-range project prioritization processes are clearly defined in state plans. Indiana's 10-year infrastructure program Major Moves (2006-2015) used a scoring process for major new capacity projects with construction costs expected to exceed \$5 million. Three primary components comprise Major Moves project scores: 1) transportation efficiency; 2) safety; and 3) economic development and customer input. Factors addressing project preservation or enhancement comprise 50 percent of the project's score, safety criteria 25 percent of the score, and criteria evaluating creation or retention of jobs, economic development, and customer input the remaining 25 percent. According to the 2030 Long-Range Transportation Plan, economic points were awarded only when direct economic impacts from a transportation project could be identified. Table 5.1 shows the scoring categories, elements, and maximum possible scores for Major Moves projects.

The Statewide Long-Range Transportation Plan adopted in June 2007 used a prioritization process similar to Major Moves but with fewer scoring criteria. The analysis primarily used the state travel demand model for information on congestion benefits, road use, and vehicle classification data (truck and automobile volumes) to determine projects' importance to the transportation system and to evaluate project priority. In the scoring process, projects were rated via points awarded in the categories shown in Table 5.2. Up to 15 points in the first four categories in the table combined could be awarded based on a project's ability to improve performance. Up to 5 points could be awarded based on the roadway classification.

Because lack of data prevented use of the full Major Moves scoring process including factors such as economic development and customer input to develop the long-range plan, a "project priority" rating also was considered. This was intended to compensate for the overemphasis on projects with higher traffic volumes and significant congestion located on interstates or the National Highway System. Projects were given 1 to 4 points based on the INDOT long-range planning district liaison's evaluation of project priority, ranging from 1 for low support to 4 for committed projects included in Major Moves. Given that all projects in Major Moves are funded, Major Moves essentially serves as the first 10 years of the long-range plan.

**Table 5.1 Major Moves Project Scoring Process**

Goal	Factors	Maximum Score
Transportation Efficiency	Cost-Effectiveness Index – Measure of Benefit/Cost Ratio and Net Present Value of Investment	20
	Congestion Relief – Measure of Mobility using Truck and Automobile AADT, V/C Ratio, and Change in LOS from the Improvement	15
	Road Classification – Measure of Highway Importance	5
	Percent Complete in Development	5
	Adjacent State or Relinquishment Agreement – Measure of Interstate Connectivity	3
	Corridor Completion – Measure of Project’s Ability to Complete Statewide Connectivity Targets	2
	<b>Transportation Efficiency Total Points Possible</b>	<b>50</b>
Safety	Crash Frequency/Density, Crash Severity, and Fatality Rate Ratio	25
	<b>Safety Total Points Possible</b>	<b>25</b>
Economic Development	Jobs Created or Retained	10
	Economic Distress and Cost-Effectiveness	5
Customer Input	Local Planning Agency Input	4
	Legislative and Elected Officials	3
	Other Citizen Input	3
	<b>Economic Development/Customer Input Total Points Possible</b>	<b>25</b>
<b>Bonus Points</b>		
Earmarks	Public/Private or Local Participating Funds	Up to 100
Urban Revitalization		10
<b>Total Points Possible, Including Bonus Points</b>		<b>210</b>

Source: INDOT 2030 Long-Range Transportation Plan.

MPOs prioritize their projects using a range of methods. While most MPOs do not use any freight criteria in their prioritization, four MPOs interviewed do incorporate freight factors. MACOG assigns points to projects that promote intermodal or multimodal activity. In 2004, MACOG undertook a freight study that involved interviewing over 100 freight companies that recommended freight improvements. These recommendations were considered in development of highway projects in the long-range plan and noted in the highway project listing. OKI recently updated its scoring process to include a freight criterion (percent trucks) for highway projects. In addition, OKI includes a separate category for non-highway freight projects. Kentuckiana Regional Planning and Development Agency (KIPDA) project sponsors are asked to identify if projects benefit the movement of freight and if they are on freight corridors; the scoring process for the long-range plan and TIP reflects these factors. NIRPC scoring awards points for

intermodal connectivity that can apply to truck terminals, rail/truck terminals, and commercial harbors. In the future, the NIRPC long-range plan may use economic development as a project selection criterion, which would boost freight's consideration.

**Table 5.2 Long-Range Plan Scoring Process**

Category	Low Measure	High Measure	Point Range
Automobile AADT	0-16,000	>72,000	0-2.5
Truck AADT	0-1,200	>5,400	0-2.5
V/C Ratio	.55-.64	>=1.51	.5-5
LOS Improvement	LOS F	LOS A	0-5
Highway Classification	Local Access Corridor	Interstate	0-5

Source: INDOT 2030 Long-Range Transportation Plan.

Note: LOS Improvement is based on the change in LOS achieved; i.e., a project that would raise LOS from F (0 points) to LOS C (3 points) would receive 3 points (3-0=3).

## Safety

### *Operation Lifesaver*

Operation Lifesaver is a nationwide, nonprofit public education and awareness program dedicated to reducing collisions, fatalities, and injuries at highway-rail intersections and on railroad property. The program is sponsored cooperatively by Federal, state, and local government agencies; highway safety organizations, and the nation's railroads. Operation Lifesaver maintains statistics on highway/rail incidents by county and participates in educational events throughout the State. Operation Lifesaver promotes the "three Es" of railroad grade crossing safety:

1. **Education** – Through increased public awareness of the dangers of grade crossings to vehicles and pedestrians;
2. **Enforcement** – Of traffic laws related to crossing signs and signals; and
3. **Engineering** – Through encouragement of continued engineering research and innovation to improve railroad grade crossing safety.

### *Strategic Highway Safety Plan*

The Indiana Strategic Highway Safety Plan identifies 2 of 13 emphasis areas related to freight: reduction of large truck crashes and reduction of crashes at highway-rail crossings. Many of the other emphasis areas also are relevant to freight, and improvements in those arenas will contribute to fewer crashes involving trucks and trains.

## **5.2 MANDATES**

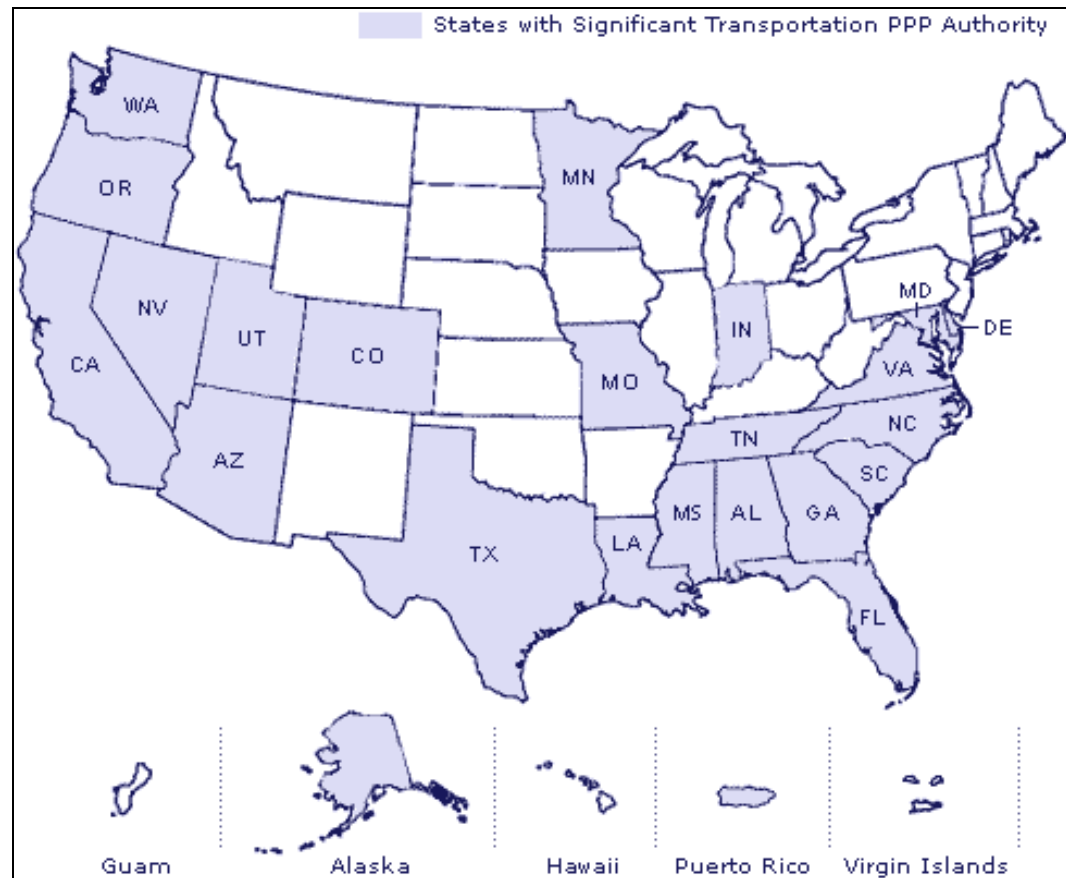
### **Public-Private Partnerships**

Indiana is at the forefront of developing public-private partnerships for operating transportation infrastructure, having leased the Indiana Toll Road to a private operator beginning in 2006. The State enacted House Enrolled Act (HEA) 1008 (IC 8-15.5; 8-15.7), which authorized the Indiana Toll Road long-term lease transaction. The legislation also established the process for entering into a public-private agreement on I-69 from Indianapolis to Evansville. However, the law specifically prohibits the State from entering into such an agreement for any other road or project without further legislative approval.

According to FHWA, Indiana is one of 23 U.S. states and one U.S. territory that have enacted statutes enabling the use of various public-private partnership (PPP) approaches for the development of transportation infrastructure, as shown in Figure 5.2.

Various economic development agencies outside INDOT partner with the private sector to provide support in retaining and attracting companies to the State. Key agencies are described below.



**Figure 5.2 States with Public-Private Partnership Enabling Legislation**

Source: FHWA.

### *Indiana Economic Development Corporation*

The Indiana Economic Development Corporation (IEDC) was established in 2005 as the State's leading economic development agency, replacing the former Department of Commerce. The IEDC is organized as a public-private partnership, governed by a 12-member board of directors chaired by the Governor. While the IEDC seeks investments in job creation in all industries, it focuses on eight sectors that offer particular opportunities for Indiana, including the Transportation, Distribution, and Logistics sector.

IEDC promotes economic development legislation such as the Major Moves infrastructure investment program. Other efforts include domestic and international outreach on the benefits of corporate location in Indiana. IEDC provides business grants, incentives, and programs, including workforce training, permitting assistance, and small business development support. Specific incentive programs offered by IEDC are listed in Chapter 7.

### *The Indy Partnership*

The Indy Partnership provides economic development assistance in the 10-county greater Indianapolis region. The organization provides data on regional benefits and corporate relocation and expansion assistance. Members of the Indy Partnership include county economic development professionals and corporations.

### **Toll Road Privatization**

Roadway privatization – relinquishing operating rights to private companies with agreed upon payment schedule terms and conditions – has emerged as a funding tool for public agencies in the United States in recent years. Texas and Indiana are among the states that have entered concession agreements with private equity firms and conglomerates. This type of public-private partnership typically benefits public agencies in the near term by providing capital up front, which can be reallocated to address other needs. Via privatization of the Indiana Toll Road, Indiana has been able to establish a funding program and schedule for multiple projects throughout the State (Major Moves), which will increase capacity and improve freight mobility throughout the State.

A common criticism of toll privatization is that the concessionaire is free to adjust rates (at a contractually limited schedule), which often exceed rates on publicly tolled facilities. In the case of the Indiana Toll Road, a truck toll increase of 21 percent was registered in 2008. For a Class 8 truck driving the entire toll road length, the toll increased from \$22.50 to \$27.25.<sup>36</sup> However, the rates on the Indiana Toll Road were, and continue to be, among the lowest in the nation.

Due in part to already slim operating margins due to insurance costs and rising fuel prices, trucking industry trends indicate that diversion of traffic off toll roads is occurring for several facilities in the United States. A recently released study entitled *Empirical Evidence of Toll Road Traffic Diversion and Implications for Highway Infrastructure Privatization* used the Ohio Turnpike as a focal point due to the abundance of historical data available for the toll road, as well as alternate routes. The study concludes that tolls on privatized facilities can be expected to increase at a faster pace than publicly owned facilities due to market adjustment, and that this level of increase can in turn be expected to divert a substantial volume of trucks to alternate routes, in the case of Ohio two-lane highways. The study concludes that if the Ohio Turnpike were privatized and rates set at a level that maximized revenue in 2004 (\$.46/mile), the level of diverted truck vehicle miles would increase four times the previous rate due to tolls.<sup>37</sup> Among the chief

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<sup>36</sup>Land Line Magazine, April 7, 2008, “Indiana Toll Road Rates Increase.”

<sup>37</sup>Swan, Peter and Belzer, Michael. November 1, 2007. “Empirical Evidence of Toll Road Traffic Diversion and Implications for Highway Infrastructure Privatization.” <http://pubsindex.trb.org/document/view/default.asp?lbid=848731>.

concerns when trucks use alternate routes are inefficient traffic flows on local roadways, safety implications, and increased wear on publicly funded roads.

### **Illiana Expressway**

The Illiana Expressway would serve as an east-west connector between I-57 in Illinois and I-65 in Indiana and provide a new route for significant traffic that must now travel through the congested Chicago region. This expressway has been proposed in various forms by regional plans for the last century. In 2006, INDOT, the Illinois Department of Transportation, NIRPC, and the Chicago Metropolitan Agency for Planning submitted a Corridors of the Future Phase I Application for the expressway that resulted in the project being shortlisted, enabling the agencies to submit a Phase II application in early 2007. While the Illiana project did not advance beyond the Phase II application, an Illiana Expressway Feasibility Study was mandated by Indiana SB 105 in 2007. The study area for the proposed corridor is shown in Figure 5.3. The study will identify:

- Project need;
- Three highway alignment corridors;
- Traffic forecasts and potential toll revenue;
- Cost;
- Financing options; and
- Impacts.

The legislation requires that study findings be presented to the Illiana Expressway Proposal Review Committee by July 1, 2009.

**Figure 5.3 Illiana Expressway Study Area**



Source: INDOT.

## Indiana Commerce Connector

The Indiana Commerce Connector was proposed in 2006 as a 75-mile partial outer beltway southeast of Indianapolis that would have linked six interstates through Morgan, Johnson, Shelby, Hancock, and Madison counties. The connector was envisioned to stimulate economic development for many regions of the State and ease traffic congestion on existing interstates, the I-465 loop, and other highways. Due to lack of public support, in 2007 the Governor announced the project would not move forward.

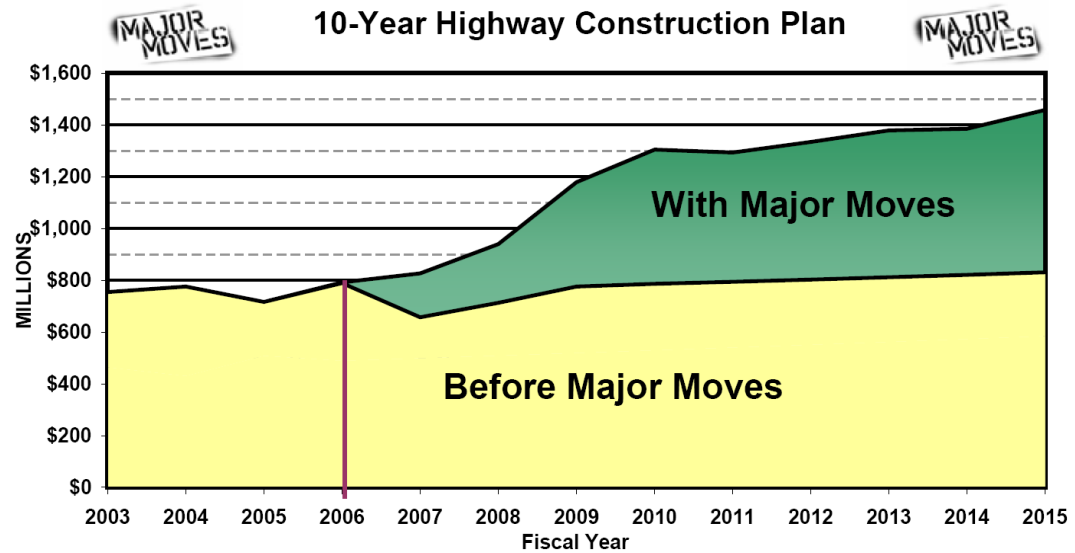
## Major Moves

Indiana's Major Moves program evolved from a plan to fund highway construction by accepting bids for the privatization of the Indiana Toll Road. In 2006, the Indiana Finance Authority (IFA), the owner of the Toll Road, received \$3.85 billion from the consortium of Cintra and Maquarie for the long-term lease of the facility. Major Moves legislation passed both the House and Senate, with the revenue generated serving to bridge the anticipated funding gap for 2006-2015.

In addition to state highway projects, under Major Moves, counties throughout Indiana were eligible for formula-based funding for local transportation projects

in 2006 and 2007. The agreement also provided employment preference for Indiana residents, level of service requirements, operating standards, electronic tolling, and select privately funded capacity improvements along the tollway. Annual new construction will increase dramatically as shown in Figure 5.4 displaying the 2006-2015 highway construction plan with and without Major Moves funding.

**Figure 5.4 Highway Construction Funding Comparison**



Source: Indiana Department of Transportation: [http://www.in.gov/indot/files/With\\_Without\\_Major\\_Moves.pdf](http://www.in.gov/indot/files/With_Without_Major_Moves.pdf).

## Corridors of the Future

The U.S. DOT established the Corridors of the Future Program as an initiative to reduce congestion on multistate corridors. Phase I applications were submitted in 2006. Phase II applications for designation as a Corridor of the Future were submitted for 14 shortlisted projects in the spring of 2007. As shown in Figure 5.5, of the six interstate corridors selected in the first round of program awards in the fall of 2007, two pass through Indiana: the I-70 Corridor and the I-69 Corridor. According to U.S. DOT, the Phase II Applications selected were chosen for their potential to use public and private resources to reduce traffic congestion within the corridors.

**Figure 5.5 Corridors of the Future**



Source: Recreated from U.S. DOT. <http://www.corridors.dot.gov/>

I-69 is a 2,680-mile international and interstate trade corridor extending from Mexico to Canada, as shown in Figure 5.5. From the Mexican border to Indianapolis, Indiana, the proposed I-69 corridor of the future project would be built on new alignment for approximately 1,660 miles. The I-69 project was awarded \$800,000 for additional study through the Corridors of the Future Program. The corridor is broken into 32 separate segments, all of which are in varying stages of development from acquisition of right-of-way to environmental review and design. Texas has identified its portion as part of the TransTexas Corridor, and Indiana has undertaken environmental clearance work on the section between Indianapolis and Evansville.

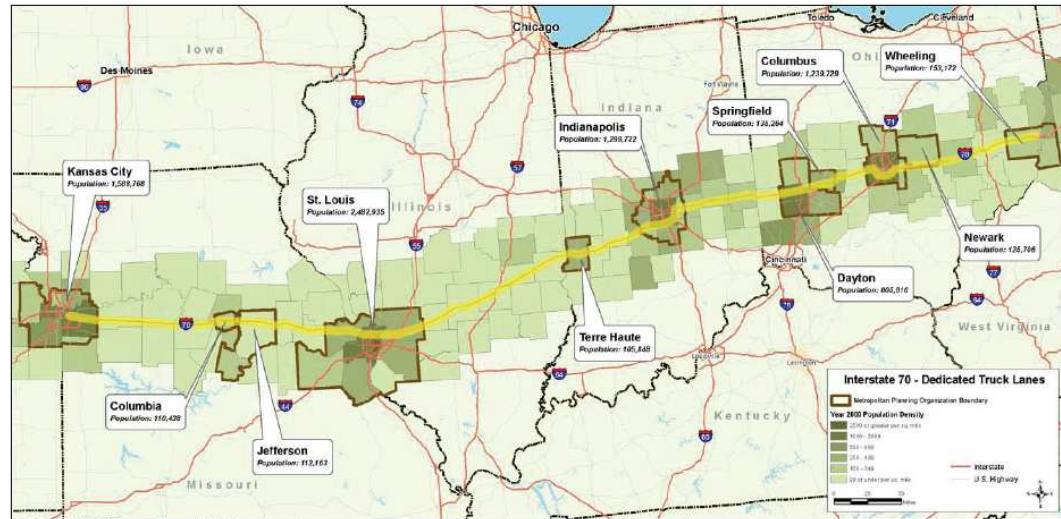
The application for I-70 submitted by Indiana, Ohio, Illinois, and Missouri proposes dedicated and segregated truck lanes along I-70 from the I-435 beltway on the eastern part of Kansas City, Missouri to the Ohio/West Virginia border near Bridgeport, Ohio/Wheeling, West Virginia, as shown in Figure 5.6. The concept proposes adding four dedicated truck lanes to existing infrastructure, two in each direction, with at least one interchange per county providing access to the truck lanes and including, conceptually, truck staging areas. These lanes would present the opportunity to pilot size and weight increases on a facility dedicated to trucks. The dedicated truck lanes are viewed as a way to reduce congestion, improve safety, and offset the maintenance costs of general purpose lanes.

Next steps include a joint feasibility study to test the dedicated truck lane concept, freight market analysis to quantify demand for this route, and completion



of an Environmental Impact Study. The four states, with Indiana as the lead, were awarded \$5 million for additional study of this corridor strategy.

**Figure 5.6 I-70 Dedicated Truck Lanes Project Area**



Source: Corridors of the Future Phase II Application, Section 1.

## Corridor Protection

### *Rail Corridor Preservation and Development*

INDOT's Rail Office manages initiatives aimed at preserving and developing freight and passenger corridors throughout the State. Rail corridor preservation is achieved through financial assistance to railroads and port authorities, participation in regional planning groups, and monitoring of rail industry developments. Recently the Office has focused its efforts on economic development and upgrading track for 286,000 pound rail car capability. The Rail Office uses the Industrial Rail Service Fund described in Chapter 7 to issue grants to maintain and upgrade "excepted" track, the lowest classification of track by the FRA over which railroads are permitted to operate with a maximum train speed of 10 mph. Since 1999, more than \$12 million has been invested in infrastructure improvements for Indiana shortline railroads.

INDOT's Rail Office is a participant in the Midwest Regional Rail Initiative studying development of high-speed passenger rail services through a nine-state area. If developed, this system would provide high-speed rail service (80-110 mph) with shorter travel times, increased frequency of service, accessibility, and reliability. Other participating states include Illinois, Iowa, Michigan, Minnesota, Missouri, Ohio, Nebraska, and Wisconsin. Based on national and regional considerations, three high-speed rail routes have been designated through Indiana:

1. Chicago through Toledo to Cleveland;

2. Chicago to Detroit; and
3. Chicago through Indianapolis to Cincinnati and to Louisville.

Current passenger rail service runs almost entirely on freight rail lines and must coordinate with freight trains. Nationally, more than 97 percent of Amtrak's 21,000 miles of routes run along tracks owned and maintained by private freight railroad companies.

The Indiana State Legislature had created the Transportation Corridor Planning Board (IC 8-4.5), which was coordinated by INDOT's Rail Office, to examine the most efficient and beneficial reuse of abandoned rail corridors. The legislation provides for four potential use strategies: 1) future freight rail; 2) future passenger rail; 3) pedestrian trails; and 4) underground utility corridors. According to the legislation, each year the rail section is to identify a list of corridors that may be abandoned, set priorities for future uses if they are abandoned, and coordinate with the railroad owner that may be abandoning the line.

The 2003 *Indiana Rail Corridor Preservation Study* found that "The process to preserve rail corridors in Indiana is cumbersome and inflexible, which precludes INDOT from taking the necessary steps to acquire rail corridors under the Federal acquisition procedures." The study also attributed challenges in rail corridor preservation to a "duplicative, time-consuming, and likely unnecessary" review and public input process conducted by the Transportation Corridor Planning Board (TCPB), an independent board created by the Indiana legislature to consider rail corridor preservation. The TCPB dissolved following publication of the study.

### *Highway Corridor Preservation*

In 2008, Senate Bill 31 was signed into law amending Indiana Code to enable the establishment of right-of-way locations for additions to the state highway system. The legislation establishes the required public hearing process, regulations governing improvements permitted to properties located in the proposed right-of-way area, and compensation for takings under eminent domain. The legislation states that the DOT is to adopt guidelines to determine whether a project constitutes an addition to the state highway system considering need for additional capacity, cost, and whether the project is new construction or maintenance.

### **Truck Size and Weight**

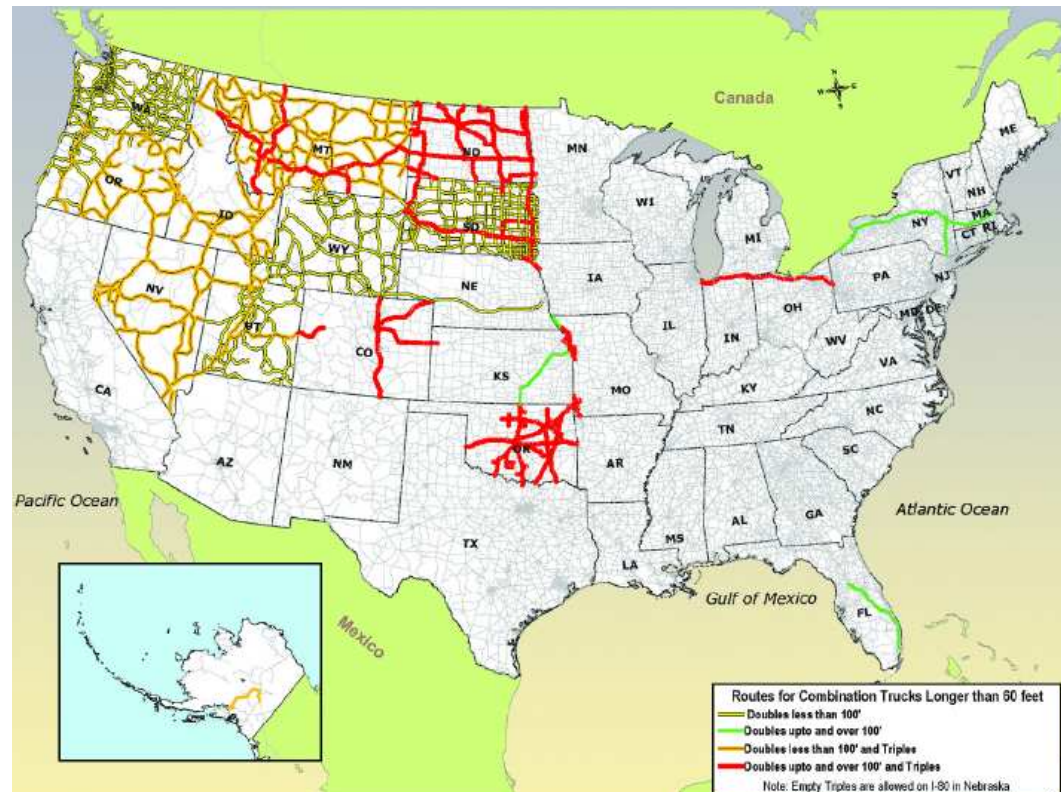
The number of trucks on roadways has been steadily increasing as the volume of freight increases and because approximately two-thirds of freight moves by truck. Size and weight limits are important for highway system preservation given that the majority of roadway damage occurs as a result of heavy truck traffic based on the load on each axle, or equivalent single-axle loads (ESAL). Given the demand to move more freight on a limited number of roadways, some constituencies have advocated higher weight limits for trucks. However, to main-



tain the existing infrastructure and for safety, the FHWA Office of Operations has stated that adherence to current weight limits is necessary. According to U.S. DOT's *Highway Cost Allocation* study, combination trucks weighing 80,000 to 100,000 pounds pay just 50 percent of the cost of the damage they cause to the highway system.

National weight standards apply to commercial vehicle operations on the interstate highway system of limited access, divided highways that span the nation. Off the interstate highway system, states may set their own commercial vehicle weight standards. Longer combination vehicles (LCV) are allowed to operate in states where they were permitted before 1991. As shown in Figure 5.7, Indiana is one of 14 states and 6 state turnpike authorities that permit LCVs on some part of the roadway network. In Indiana, LCVs are permitted only on the Indiana Toll Road, where double combination trucks up to and over 100 feet and triple combination trucks are allowed.

**Figure 5.7 Permitted Longer Combination Vehicles on the National Highway System**



Source: *Freight Facts and Figures 2007*, FHWA Office of Freight Management and Operations.

Federal commercial vehicle maximum weight standards on the interstate highway system are:

- **Single Axle** – 20,000 pounds;

- **Tandem Axle** – 34,000 pounds; and
- **Gross Vehicle Weight** – 80,000 pounds.

The bridge formula was introduced in 1975 to reduce the risk of damage to highway bridges by requiring more axles, or a longer wheelbase, to compensate for increased vehicle weight. The formula may require a lower gross vehicle weight, depending on the number and spacing of the axles in the combination vehicle.

Federal size standards<sup>38</sup> are as follows:

- **Overall Vehicle Length** – No Federal standard;
- **Trailer Length** – No state may impose a length limitation of less than 48 feet on a semitrailer operating in any truck tractor-semitrailer combination on the National Network;
- **Width** – No state may impose a width limitation of *more or less* than 102 inches; and
- **Height** – No Federal vehicle height limit is imposed. State standards range from 13.6 feet to 14.6 feet.

In Indiana, a permit is needed for the movement of a vehicle or a combination of vehicles, including the load, of a size and/or weight that exceeds the maximum legal size, and weight limits as established by state law (IC 9-20-3, IC 9-20-4). Except for certain vehicles given a permit exemption, on most roads any transport exceeding the following limits must obtain a permit prior to moving on Indiana highways:

- Width limitation is 8 feet 6 inches;
- Height limitation is 13 feet 6 inches;
- Length limitation of a single vehicle operated under the vehicle's own motive power is 40 feet;
- Recreational vehicle length limit is 40 feet;
- Common carrier of persons limit is 40 feet;
- Two-vehicle combination limit is 60 feet, with a 53-foot limit on the semitrailer. In addition, a semitrailer longer than 48 feet 6 inches may not be operated on any Indiana public highway when the distance between the kingpin and the rearmost axle of the semitrailer exceeds 40 feet 6 inches for semitrailers manufactured after December 31, 1984; or 42 feet 6 inches for semitrailers manufactured before January 1, 1985.

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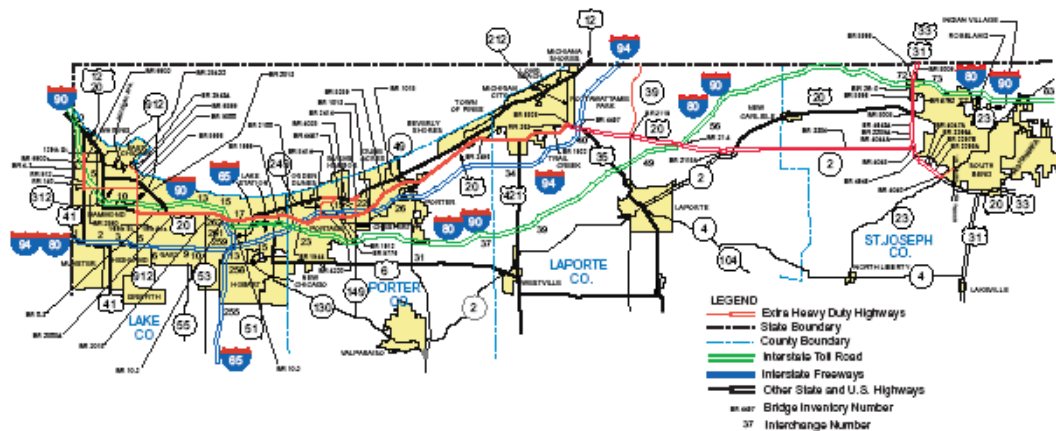
<sup>38</sup>FHWA Commercial Vehicle Size and Weight Program, <http://ops.fhwa.dot.gov/freight/sw/overview/index.htm#1b>.

- Three-vehicle combination limit is 65 feet, with a limit of 28 feet 6 inches for each semitrailer and trailer.
- Legal weight limitation of 80,000 pounds total gross weight, subject to all individual axle weights conforming to the Federal Bridge Formula.

On some Indiana roads, weights above 80,000 pounds are permitted. Indiana permits loads of up to 90,000 pounds on the Indiana Toll Road. The State also has designated Extra Heavy Duty Highways on which loads of up to 134,000 pounds are permitted when a special permit is obtained, per IC-9-20-5. Extra heavy duty highways in Indiana shown in Figure 5.8 are in the northern portion of the State. These higher weight limits were originally created to enable the transport of heavy steel materials on the highway.

The trucking community has noted that Indiana's lower weight limit as compared to its neighboring state Michigan presents some challenges for them. In Michigan, gross vehicle weight of 164,000 pounds is permitted for truck combinations up to 11 axles. Therefore, trucks operating in Michigan near the Indiana border may need to take longer routes within Michigan to avoid traveling on Indiana roads, most of which have a limit of 80,000 pounds, and interstate trucks traveling long distances including across the Michigan/Indiana border are required to reconfigure their loads at the border to adhere to Indiana's lower weight limits.

**Figure 5.8 Indiana Extra Heavy Duty Highways**



Source: INDOT.

### Enforcement

Each state is required to submit an annual State Enforcement Plan (SEP) to FHWA describing procedures for enforcement of vehicle size and weight laws. The Indiana State Police conduct commercial vehicle enforcement of hazardous materials transport and size and weight limits.

According to the SHSP, currently the statewide court system has little knowledge of the increasingly technical and highly regulated transportation industry. Often

commercial motor vehicle (CMV) drivers participate in court-sponsored diversion and deferral programs despite Federal and state prohibitions for CMV drivers. Diversion and deferral programs offer first-time offenders a second chance without affecting their permanent record. In diversion programs, no charges are filed and offenders are required to pay a fine and/or complete some type of alternate programming, such as education or community service. In deferral programs, charges are filed, but can be dropped upon successful completion of this programming.

The SHSP identifies the strategy that state agencies will work with the Indiana legislative branch to strengthen laws on adjudication of CMV moving violations. Additionally, no statewide system exists for identifying problem motor carriers or commercial drivers (e.g., chronic safety, overweight, traffic violators). While Indiana statutes allow the Department of Revenue to penalize chronic overweight carriers, it is difficult to obtain information on these carriers and no formalized process is in place to enforce the statute.<sup>39</sup>

## **Truck Routes**

Indiana does not have a designated statewide truck route program. However, based on Indiana statutes, the truck freight network is composed of interstate highways, U.S. highways, state routes, and other principal arterials, subject to the dimensions authorized and to local restrictions, such as posted bridges that have designated weight and vertical clearance limits.

Illinois, Kentucky, and Michigan have designated truck routes. Ohio DOT has no restrictions on where heavy trucks may operate, permitting them on all state highways. Within Indiana, some local jurisdictions have developed their own truck route designations or information. The City of Indianapolis has designated truck routes but has not developed a truck route map. The benefit to Indiana permitting trucks on all state and U.S. routes is that carriers have a large number of routing options available to them, and if an incident occurs, truckers have various possibilities for rerouting.

However, several advantages have also been identified for the existence of designated truck routes. Most of these advantages are more directly related to the perspective of the state's residents and government. For example, by limiting trucks to specific roadways, heavy wear and tear is also limited to those roadways, making pavement and roadway maintenance easier to manage and control. It also allows the state to target freight-related highway investments to critical corridors and roadways. The Statewide Mobility Corridors identified in Chapter 3, for example, could be used as starting points for major intercity truck routes within the state. Some cities, such as Washington, DC, find it easier to

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<sup>39</sup>Indiana Strategic Highway Safety Plan, 2006.

control truck traffic around sensitive facilities.<sup>40</sup> Finally, designated truck routes can be used to reduce safety, noise, pollution, and congestion impacts in residential areas or other neighborhoods where these issues are a concern.

Some of these outcomes of designated truck routes also translate into advantages from the truckers' perspective. Truck routes ensure that trucks do not travel on roadways that may not be suitable or safe in terms of clearance or geometrics. By targeting investments for trucks to specific roadways, trucks can experience improved safety, travel times, and comfort. Finally, a system that is coordinated with local jurisdictions could help to reduce the confusion caused by a current patchwork of county and municipal regulations.

However, a designated truck route system could also add confusion for truckers who have to alter their usual routes; police who have to learn new regulations and know which routes are allowable to trucks; and even residents who may come to have certain false expectations about which kinds of trucks are allowed on which roads and at which times. Such a system also requires the development and maintenance of appropriate signage and maps. Increased enforcement costs are also required in order for the system to be effective. Other potential increased costs include the need for more truck parking areas due to the increased regulations; potentially increased shipping costs due to increased VMT or VHT from less direct routes; and reduced business attractiveness in some areas with limited truck access.<sup>41</sup>

## **Hazardous Material Restrictions**

### *State and National Regulation*

Hazardous material transport is regulated under the Federal Hazardous Materials Transportation Law by the Office of Hazardous Materials Safety (OHM). Hazardous Materials Regulations cover “hazardous materials definitions and classifications; hazard communications; shipper and carrier operations, training, and security requirements; and packaging and container specifications.”<sup>42</sup> According to the OHM, risk management principles and security threat assessments are employed to understand, communicate, and reduce hazardous materials dangers inherent in transportation.

Figure 5.9 displays hazardous materials (hazmat) incidents (air, rail, highway, and water) for Indiana and neighboring states from 2003 to 2007.

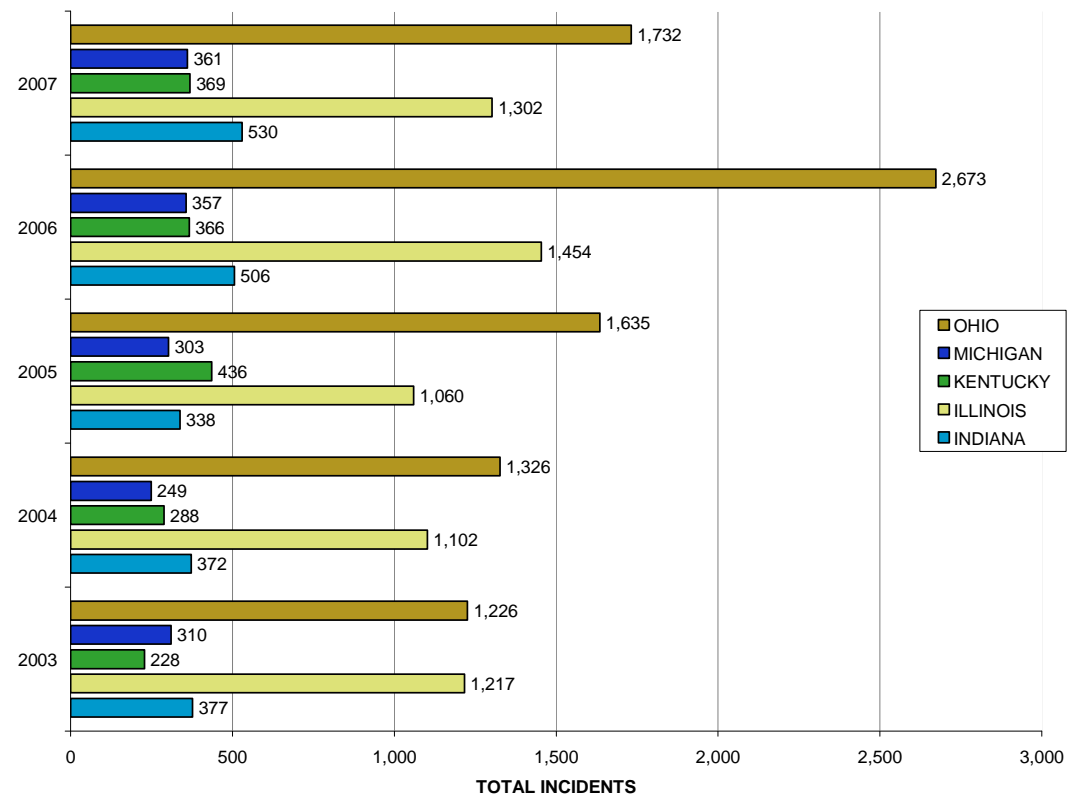
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<sup>40</sup> *District of Columbia Motor Carrier Management and Threat Assessment Study*, Volpe National Transportation Systems Center, October 2003.

<sup>41</sup> *Truck Size, Weight and Route Regulation in Illinois*, presentation by Larry Wilson, Wilson Consulting. Presented to TRF Chicago Chapter, July 2005.

<sup>42</sup> United States Office of Hazardous Materials Safety.

**Figure 5.9 Hazardous Materials Incidents**  
2003-2007



Source: U.S. Department of Transportation, Hazardous Materials Information System, <http://hazmat.dot.gov/pubs/inc/data>.

The Federal Motor Carrier Safety Administration (FMCSA) also maintains a searchable nationwide database, the “National Hazardous Materials Route Registry,” of restricted and prescribed routes for urban areas.<sup>43</sup> A sample search for Indiana focuses on the Indianapolis area and includes specific restriction and/or designation information for each select route. Table 5.2 identifies the hazardous materials restrictions and designations.

<sup>43</sup>FMCSA National Hazardous Materials Route Registry. Accessible at: <http://hazmat.fmcsa.dot.gov/nhmrr/index.asp>.

**Table 5.2 National Hazardous Materials Route Registry Key, Indiana**

Restriction/Designation Key	
Restrictions Prohibited for the indicated hazmat	Designations Recommended for indicated hazmat
0 - ALL Hazmats	A - "Prescribed Route" ALL NRHM Hazmats
1 - Class 1 – Explosives	B - "Prescribed Route" Class 1 – Explosives
2 - Class 2 – Gas	P - "Preferred Route" Class 7 – HRCQ Radioactive
3 - Class 3 – Flammable	I - "Prescribed Route" Poisonous Inhalation Hazard (PIH)
4 - Class 4 – Flammable Solid/Combustible	M - "Prescribed Route" Medical Waste
5 - Class 5 – Organic	
6 - Class 6 – Poison	
7 - Class 7 – Radioactive	
8 - Class 8 – Corrosives	
9 - Class 9 – Dangerous (Other)	
I - Poisonous Inhalation Hazard (PIH)	

Source: FMCSA National Hazardous Materials Route Registry.

At the state level, cleanup and remediation for hazardous materials spills and incidents is organized through the Indiana Department of Environmental Management, which has a primary Indianapolis location in addition to three regional offices throughout the State.

At the local level, hazardous materials are addressed both through preventative and reactive measures. An example of a preventive technique can be seen in Northwest Indiana, where NIRPC describes hazmat routing as being determined by local emergency management agencies. On the reactive side, fire departments such as the Carmel Fire Department employ a special hazard response unit, composed of officers and firefighters with specialized hazardous materials training.<sup>44</sup> In addition, the department is "a member of the Hamilton County Hazardous Materials Task Force, which is a combined effort of all fire departments in Hamilton County to coordinate and train together for scenarios that are outside the capabilities of one fire department. The task force has a hazmat response vehicle maintained by Noblesville Fire Department; Carmel Fire Department's vehicle comprises some of the other resources. The task force also responds to municipalities that do not have any hazmat response resources."<sup>45</sup>

<sup>44</sup>According to the Carmel Fire Department web site: "The Hazardous Materials Response Team operates with 13 officers and 13 firefighters who have completed an 80-hour hazardous materials technician training class. Some team members have gone on to further their training by attending the National Fire Academy chemistry of hazardous materials, hazardous materials site practice class, Weapons of Mass Destruction class, as well as a detonation recognition class."

<sup>45</sup>Carmel Indiana Fire Department. <http://www.ci.carmel.in.us/services/fire/hazmat.html>.

## Truck Parking

A shortage of parking along many major highway corridors is among the major issues facing the trucking industry, along with increasing fuel and insurance costs and shortages of qualified drivers. The lack of availability of both public and private parking is compounded by hours-of-service regulations and enforcement. The result is that often when drivers need to stop to rest, they cannot find designated parking for their vehicle and are forced to park in locations such as highway ramps, along residential streets, or in commercial parking lots. Parking in these types of locations can present safety problems and result in objections by communities.

The trucking industry has indicated that in Indiana, existing facilities are full on a consistent basis, which is a cause for concern as related to hours-of-service regulations. Public truck-only parking facilities do exist along the Indiana Toll Road, in locations formerly occupied by service plazas; however, these facilities do not include electrical hook-ups for trucks (causing noise and air quality concerns for nearby neighborhoods).

In addition to public rest areas, Indiana has more than 160 private truck stops, which are primarily situated along major interstate and U.S. highway routes according to America's Independent Trucker's Association (AITA).<sup>46</sup> The AITA has begun composing a comprehensive state-by-state list of truck stop locations throughout the country, which includes name and contact information for each. As of 2003, 36 public rest areas and welcome centers are distributed throughout the State.<sup>47</sup>

Table 5.3 displays findings from the 2002 FHWA national study of truck parking, *Study of Adequacy of Commercial Truck Parking Facilities*. As shown, Indiana results revealed a slight shortage in public parking facilities and sufficient private facility capacity. Another study, funded by the Illinois DOT and led by researchers at the Illinois Institute of Technology, is currently underway. That study will examine truck parking in northeast Illinois, which could affect trucks traveling to and from Indiana.

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<sup>46</sup>America's Independent Trucker's Association. <http://www.aitaonline.com/TS/IN.html>.

<sup>47</sup>INDOT, "Welcome Centers and Rest Areas". <http://www.in.gov/tourism/pdfs/2003RestAreas.pdf>.



**Table 5.3 Truck Parking Demand and Availability by State**

State	Public		Commercial		Total	
	Ratio	Category	Ratio	Category	Ratio	Category
Alabama	2.29	Shortage	0.79	Surplus	0.93	Sufficient
Alaska <sup>a</sup>	0.05	Surplus	N/A	N/A	N/A	Surplus
Arizona	1.88	Shortage	0.43	Surplus	0.53	Surplus
Arkansas	5.20	Shortage	0.79	Surplus	0.99	Sufficient
California	4.10	Shortage	2.03	Shortage	2.29	Shortage
Colorado	4.55	Shortage	0.94	Sufficient	1.15	Shortage
Connecticut	1.71	Shortage	1.66	Shortage	1.67	Shortage
Delaware	2.94	Shortage	2.14	Shortage	2.28	Shortage
Florida	0.99	Sufficient	0.77	Surplus	0.81	Surplus
Georgia	1.88	Shortage	0.64	Surplus	0.75	Surplus
Idaho	3.00	Shortage	1.25	Shortage	1.44	Shortage
Illinois	2.63	Shortage	1.16	Shortage	1.33	Shortage
<b>Indiana</b>	<b>1.77</b>	<b>Shortage</b>	<b>0.99</b>	<b>Sufficient</b>	<b>1.10</b>	<b>Shortage</b>
Iowa	0.86	Surplus	0.44	Surplus	0.50	Surplus
Kansas	1.24	Shortage	0.44	Surplus	0.51	Surplus
Kentucky	2.23	Shortage	1.03	Sufficient	1.17	Shortage
Louisiana	9.32	Shortage	0.75	Surplus	0.96	Sufficient
Maine	1.81	Shortage	0.55	Surplus	0.66	Surplus
Maryland	2.01	Shortage	0.87	Surplus	1.00	Sufficient
Massachusetts	6.16	Shortage	1.51	Shortage	1.83	Shortage
Michigan	0.81	Surplus	0.69	Surplus	0.72	Surplus
Minnesota	1.63	Shortage	0.65	Surplus	0.75	Surplus
Mississippi	2.93	Shortage	0.60	Surplus	0.73	Surplus
Missouri	4.28	Shortage	0.72	Surplus	0.89	Surplus
Montana	1.18	Shortage	0.50	Surplus	0.58	Surplus
Nebraska	0.95	Sufficient	0.30	Surplus	0.35	Surplus
Nevada	2.62	Shortage	0.46	Surplus	0.57	Surplus
New Hampshire	0.84	Surplus	0.35	Surplus	0.40	Surplus
New Jersey	0.69	Surplus	0.41	Surplus	0.45	Surplus
New Mexico	15.62	Shortage	0.65	Surplus	0.83	Surplus
New York	1.43	Shortage	0.87	Surplus	0.95	Sufficient
North Carolina	1.98	Shortage	0.58	Surplus	0.69	Surplus
North Dakota	0.72	Surplus	0.31	Surplus	0.36	Surplus
Ohio	2.35	Shortage	0.96	Sufficient	1.12	Shortage
Oklahoma	1.41	Shortage	0.37	Surplus	0.45	Surplus
Oregon	1.89	Shortage	0.67	Surplus	0.79	Surplus
Pennsylvania	1.82	Shortage	0.54	Surplus	0.65	Surplus
Rhode Island	0.63	Surplus	1.35	Shortage	1.07	Sufficient
South Carolina	1.55	Shortage	0.50	Surplus	0.59	Surplus
South Dakota	0.54	Surplus	0.50	Surplus	0.51	Surplus
Tennessee	1.58	Shortage	0.63	Surplus	0.74	Surplus
Texas	12.70	Shortage	1.18	Shortage	1.49	Shortage
Utah	1.64	Shortage	0.53	Surplus	0.62	Surplus
Vermont	0.15	Surplus	0.20	Surplus	0.19	Surplus
Virginia	2.16	Shortage	0.80	Surplus	0.93	Sufficient
Washington	1.79	Shortage	1.02	Sufficient	1.14	Shortage
West Virginia	0.92	Sufficient	0.92	Sufficient	0.92	Sufficient
Wisconsin	0.97	Sufficient	0.35	Surplus	0.41	Surplus
Wyoming	0.56	Surplus	0.39	Surplus	0.42	Surplus

Source: FHWA, Study of Adequacy of Commercial Truck Parking Facilities, March 2002. [www.tfhrc.gov/safety/pubs/01158](http://www.tfhrc.gov/safety/pubs/01158).

<sup>a</sup> Commercial parking spaces not reported; however, the number of public spaces exceeded the estimated total demand.

Another study on truck parking facilities in the Midwest is underway by the Mississippi Valley Freight Coalition/Center for Freight Infrastructure Research

and Education and is scheduled to be complete in early 2009. The study is using mapping technology to capture comments about truck parking, and preliminary input is being captured at the project web site.<sup>48</sup> Drivers are finding several locations along routes around Indianapolis and in Northwest Indiana to frequently be full during evening hours. Problem locations in Indianapolis include parking areas at the I-465 interchanges with I-70 and SR 37, and on I-65 near the I-70 interchange, near Illinois Street, near the I-74/I-465 interchange, and near I-65 adjacent to the Lafayette Square Mall. A number of locations with truck parking issues also were flagged along I-80/I-94 in Northwest Indiana.

## Delivery Time Restrictions

Delivery time restrictions for heavy trucks are a multifaceted issue that has been a topic of debate in recent years. Shifting truck activity to off-peak hours can greatly reduce congestion on roadways in major urban areas, central business districts, and areas with high concentrations of industrial, warehousing, and distribution activity. However, adjustments to the supply and distribution chain are complex, and the logistics challenges for shippers caused by restrictions to certain periods are not immediately outweighed by lowered congestion and increased efficiency. At the local level, some communities have created restrictions via local ordinances to prohibit deliveries during nighttime hours, primarily to reduce noise impacts.

Recent research has cast doubt onto whether trucks will shift travel to off-peak hours due to tolling in peak periods. For example, the October 2007 *New York Congestion Pricing Commission Technical Report* addressing freight routes within New York City found that:<sup>49</sup>

*...commercial vehicles are not prone to shift their time of operations as a result of toll increases during the peak hours of the day. The primary reason is that receivers of goods tend to dictate time of delivery, and are typically only open during regular business hours. Accepting off-peak deliveries would require businesses to incur additional costs in terms of personnel, security, and utilities necessary to stay open during off-peak hours. The success of any off-peak delivery program hinges on receivers' willingness to accept it, which would require that they obtain economic benefits higher than the marginal costs incurred. Research shows that the financial benefits for receivers such as tax deductions for employees working the off-peak shifts or reductions in shipping costs have a greater impact on the market for off-peak deliveries than tolls alone. Programs targeting both carriers and receivers, such as PierPass Off-Peak Program at*

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<sup>48</sup><http://mvfcpraveen.cae.wisc.edu/visualizer/>.

<sup>49</sup>Congestion Pricing Commission Technical Analysis, Task 2 – Night Delivery Incentives and Regulations as Alternatives to Pricing. Cambridge Systematics, October 30, 2007.

*the Port of Los Angeles-Long Beach, seem to have a better success rate than those targeting one sector of the logistics industry.*

The study applied findings from several case studies to conditions facing freight movements within New York City. Brief summaries are provided for the popular off-peak delivery programs.

Federal hours-of-service regulations are an additional consideration with regard to shifting to off-peak travel times, particularly for long-haul truckers whose routes take a day or more to complete. Truck operators must adhere to strict regulations regarding the number of consecutive work hours in a day, and total work hours in a week, before taking a mandatory break. Drivers who reach the maximum on-duty hours in a day must take ten consecutive hours off before returning to work. This restriction limits truckers' flexibility in terms of maximizing off-peak operations.

### *Port of Los Angeles-Long Beach PierPass*

The PierPass program was established in 2005 under the premise of shifting weekday peak truck traffic to weekday and weekend off-peak operating hours. Under the program, all international container terminals at the ports of Los Angeles and Long Beach made available additional off-peak shifts (6:00 p.m. to 3:00 a.m. on weekdays, 8:00 a.m. to 6:00 p.m. on Saturdays). Drivers choosing to utilize the off-peak option are not assessed a traffic mitigation fee, which currently is \$50 per 20-foot equivalent unit (TEU). Fees collected are applied toward the costs of maintaining the PierPass Program and the additional off-peak service hours.

A recent study commissioned by PierPass indicates that the program has been widely adopted by shippers and currently 45 percent of cargo moves are completed during off-peak hours. Prior to the PierPass program, an estimated 17 to 21 percent delivered goods during off-peak hours.<sup>50</sup> Based on stakeholder input and Caltrans traffic data, the report findings indicate that PierPass has largely achieved the goals of shifting truck traffic to off-peak hours; however, improvement is still needed in the program to gain greater efficiency.

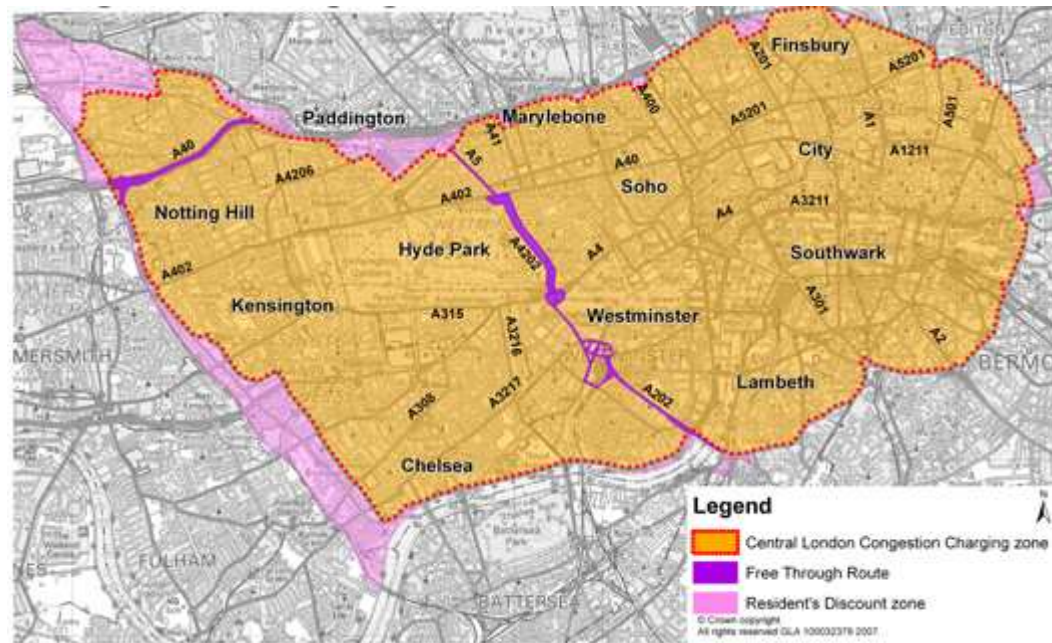
### *London Congestion Pricing*

As a means of reducing overall traffic and congestion within the city, London established a congestion pricing program in 2003, which assessed a fee on all vehicle types (passenger and truck, with some exemptions) for weekday access to the downtown area ("charge zone"). The charge zone is displayed in Figure 5.10. The current rate is £8 (U.S. \$15) daily, and £10 (U.S. \$19) the following day; with a penalty charge of £120 (U.S. \$224) if charge is not paid by

<sup>50</sup>PierPass Review Final Report. BST Associates. July 9, 2008. Available at: [http://www.pierpass.org/files/offpeak\\_program/PierPASS\\_BST\\_Final\\_Report\\_7-9-2008.pdf](http://www.pierpass.org/files/offpeak_program/PierPASS_BST_Final_Report_7-9-2008.pdf).

the day following use. Payments can be made on-line, via text message, telephone at select retail outlets, self-service machines, or by mail.

**Figure 5.10 Central London Congestion Charge Zone**



Source: Transport for London.

From a truck traffic perspective, available 2002-2006 data indicate an overall decrease in trucks entering the zone of 13 percent, and a decrease of truck miles within the zone of 7 percent.<sup>51</sup>

### *Port Authority of New York and New Jersey (PANYNJ) Value Pricing Initiative in New York City*

The Port Authority of New York and New Jersey operates six bridge and tunnel facilities that collectively accommodate more than 100 million vehicles annually. PANYNJ introduced a value pricing model in 2001 in an attempt to manage congestion on each facility, as well as to provide a funding mechanism. Figure 5.11 depicts the PANYNJ facility locations.

<sup>51</sup>Ibid. at 19.

Figure 5.11 PANYNJ Facility Locations



Source: PANYNJ.

Table 5.4 displays a partial listing of the toll rate schedule, showing that discounts apply only to E-ZPass electronic tolling customers with special designations for off-peak and overnight hours.

**Table 5.4     PANYNJ Toll Rates**  
*Effective March 2, 2008<sup>52</sup>*

Class	Vehicle Type	E-ZPass			Cash Toll All Hours
		Off-Peak Hours <sup>a</sup>	Peak Hours <sup>b</sup>	Trucks Weekday Overnight Hours <sup>c</sup>	
3	Vehicles with Three Axles	\$21.00	\$24.00	\$16.50	\$24.00
4	Vehicles with Four Axles	\$28.00	\$32.00	\$22.00	\$32.00
5	Vehicles with Five Axles	\$35.00	\$40.00	\$27.50	\$40.00
6	Vehicles with At Least Six Axles	\$42.00	\$48.00	\$33.00	\$48.00
		\$7.00 each (axle in excess of 6)	\$8.00 each	\$5.50 each	\$8.00 each

<sup>a</sup> Off-Peak Hours – All other times, including the following holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

<sup>b</sup> Peak Hours – Weekdays 6:00 a.m.-9:00 a.m., 4:00 p.m.-7:00 p.m., Saturday and Sunday 12 Noon-8:00 p.m.

<sup>c</sup> Overnight Hours for Trucks – Midnight to 6:00 a.m. Weekdays.

Research on the effects of the PANYNJ variable pricing program suggest that frequent users of the tolled facilities modified multiple aspects of their operations to address pricing changes, including: “productivity increases, change in facility usage, and cost transfers.”<sup>53</sup> In the case of PANYNJ shippers, however, the cost savings combined with operational inflexibility and other factors has led to little change in facility users’ traffic patterns.

<sup>52</sup>Port Authority of New York and New Jersey. <http://www.panynj.gov/CommutingTravel/tunnels/html/tolls.html>.

<sup>53</sup>Ibid at 19.

## 6.0 Freight Transportation Gaps and Needs

This Chapter is a compilation of the information presented in previous sections, assembled for the purpose of identifying gaps and needs in Indiana's freight transportation system. These data were analyzed to identify major freight needs and deficiencies in major multimodal corridors, reflecting both current and forecast conditions. Both physical and operational needs and deficiencies have been identified. The analysis included the use of the ISTDM; ongoing and recently completed studies; national datasets, such as FAF2; and needs identified by key stakeholders, including the trucking industry, shippers, and MPOs. Needs in neighboring states, to the extent that they affect transportation flows into, out of, and through Indiana, were also reviewed.

Section 6.1 of this report provides snapshots for several of the primary industries of Indiana. The snapshots explain how these industries drive transportation demand into and within the state, the types of travel patterns and modes this entails, and resulting industry-specific transportation gaps and needs. Section 6.2 paints a mode-neutral picture of the freight demands on the transportation system now and in the future by examining major commodity flows and trading partners. The remaining sections examine gaps and needs by mode: highway and truck; rail; air; marine; and pipeline.

### 6.1 MAJOR INDUSTRY PROFILES

#### Coal and Energy

##### *Energy Consumption and Importance to the Economy*

The cost of energy is a key business climate consideration that affects the site location decisions of prospective companies and also influences the willingness of local companies to expand. Businesses expect a reliable flow of competitively priced electricity (not only do blackouts or brownouts bring work to a halt, but they also can destroy production runs in many industries). Electricity expenses also are a factor affecting the overall cost of living in Indiana and the State's attractiveness to residents. Efforts to lower the costs of electricity, including the costs of transporting energy to markets, have a positive impact on Indiana businesses and residents, alike. Due to the intensive use of coal to generate electricity and the commensurately high coal volumes hauled on Indiana railways, the link between freight transportation and energy production is significant. Coal is also an important input to the state's steel industry, as coal-



derived coke is used in blast furnaces to produce steel. Much of this coke is produced in Indiana plants.

As discussed in Chapter 4, Indiana's total energy consumption (including all uses) in recent decades has grown proportionately with the State's population. If this relationship holds into the future, Indiana's energy supplies will need to grow to meet the State's projected increases in population. To satisfy its energy needs, Indiana will either need to add generating capacity within the State or import more electricity from other states. Eventually, Indiana's generators will need to increase production and more power plants will need to be built.

Coal is the leading energy source in Indiana. If oil and gas prices continue rising as they have since 2004, the use of coal is likely to increase even more. In Indiana, the annual consumption of coal has increased from 33 million tons in 1960 to 73 million tons in 2005, the highest level on record. According to 2005 figures, coal now accounts for 55 percent of the energy consumed in Indiana, and is essential for fueling Indiana's 32 coal-fired power plants<sup>54</sup> and numerous industries. Indiana consumes more coal than any other state except Texas.

In the future, Indiana will need more fuel(s) to meet demands for electricity generation as its population and economy continue to grow. It is anticipated that a portion of these fuel needs will be met by increasing the use of coal, and there is one large coal-fired power plant currently under construction in Indiana (a 630 megawatt Duke Energy facility in Edwardsport, Knox County is expected to come on-line in 2012).

### *Natural Resource Production*

Indiana has historically ranked as one of the larger producers of coal in the country. Indiana's coal production grew from 26 million tons in 1995 to 35 million tons in 2006, a 35 percent increase. Coal mined in the southwestern part of the State is transported by rail and truck to utilities throughout the State and region (e.g., Ohio River Valley) to generate electricity. While only about 23 percent of all the coal consumed in Indiana was delivered by truck, nearly this entire share was produced in-state. Just over 50 percent of Indiana-produced coal reached Indiana destinations by truck. While the Illinois Basin variety of coal mined in Indiana is presently less favored by utilities due to its high sulfur content, its abundance and the introduction of cleaner coal technologies are expected to drive increased use in the future.

### *Logistics and Transportation Issues*

Even with its own vast coal deposits, substantial shipments of coal are transported to Indiana by train from other states, particularly Wyoming and

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<sup>54</sup>Indiana Utility Regulatory Commission, 2008; includes 20 large plants (over 200 megawatts) and 12 smaller power generation facilities.



West Virginia. Coal is the number one commodity carried into the state by rail, and given current commodity prices it is likely to maintain its prominence in the state's energy mix in the face of rocketing oil and gas prices. In 2005, coal accounted for 47 percent (21 million tons) of all goods transported by rail (by weight) with an Indiana destination. Because of its weight and the volumes required to sustain electricity production at power plants, rail and barge are the preferred modes for transporting coal.

The transport of fuels (i.e., coal and petroleum) by rail is a leading component in the cost of the energy, and the capacity and cost of rail transportation to and through Indiana will directly influence electricity prices in the state. Indiana's electricity costs are the ninth lowest in the nation, giving the State's manufacturers a cost benefit over most other locations, a strong advantage as the State competes worldwide for attracting business.<sup>55</sup> Higher coal consumption in Indiana will depend, in part, on the railroads' and the Mississippi-Ohio River system's ability to transport coal, particularly the low sulfur variety from Wyoming's Powder River Basin, into the State.

Currently, coal traveling to Indiana by rail from points west is faced with one of the nation's largest rail bottlenecks in Chicago—a bottleneck which is expected to worsen in the future. Direct west coast service to Indiana bypassing Chicago, or major rail improvements to the Chicago area, could improve travel times and reduce costs for shipping coal from western states to Indiana.

Greater access to the State's own coal mines, primarily in southwestern Indiana, and greater connectivity between these mines and consumption points would diminish the need for interstate coal shipments. The "last mile problem" is a term describing the disconnect between major rail corridors in Indiana and the state's coal mines, whereby it is often more economical for coal customers, particularly those in the northern part of the state, to import fuel from as far away as Wyoming or West Virginia, rather than from Indiana mines. While there are a number of coal-fired power plants in the vicinity of Indiana's southwest coal-producing region, there are also plants around Indianapolis, Chicago, and throughout the Ohio River valley.

According to the Energy Information Administration, over half of the intrastate coal movements in Indiana, by weight, traveled by truck. As scrubber technology is installed in all of the State's power plants, the potential to burn Indiana coal will increase substantially. The remaining in-state coal supply is extensive, and increased production may result in considerable strain on the secondary highway system in southwest Indiana unless the railroads carry a greater share of this traffic.

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<sup>55</sup>U.S. Department of Energy, Energy Information Administration, November 2007 (data are for 2006).

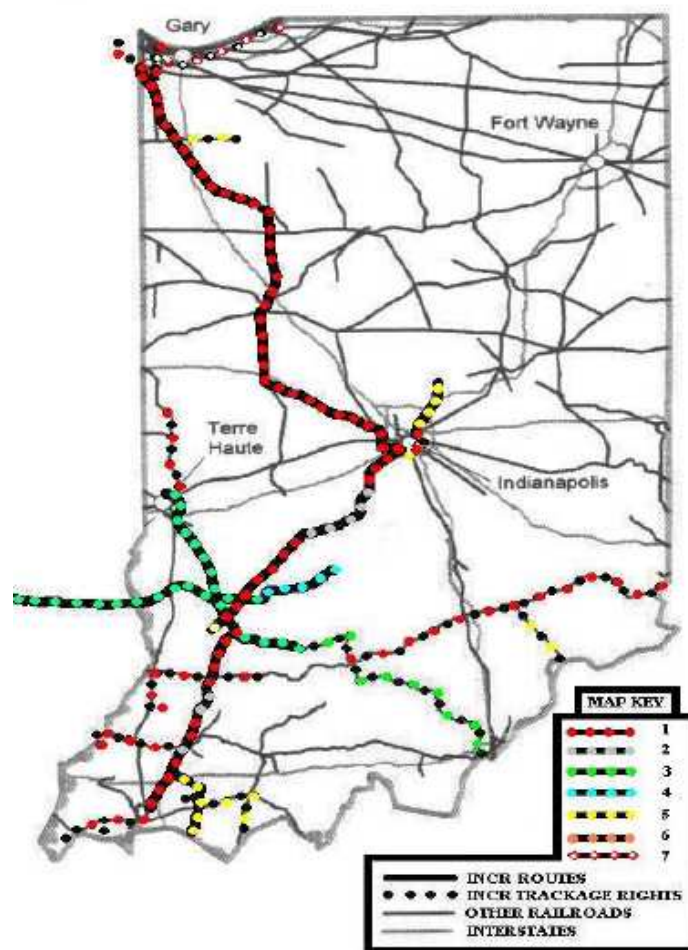
A May 2007 study published by the Center for Coal Technology Research at Purdue University recommended the development of an “Indiana Coal Corridor,” as shown in Figure 6.1.<sup>56</sup> The proposed corridor does not call for any new infrastructure investment, only the designation of a quasigovernmental body that would negotiate and obtain trackage rights in order to act as a single end-to-end operator, connecting southern coal mines with northern power plants, mainline railroads, and ports. Such an entity would seek to increase the share of Indiana coal used in the state’s power plants, and also position the state to increase coal exports through its Great Lakes and Ohio River ports. Constraints in the transportation network are a primary inhibitor of greater coal extraction and exporting in Indiana.

On the Ohio River, coal is a significant commodity, both exported from mines and received by power plants. Currently, a substantial portion of the coal entering Indiana from West Virginia arrives by Ohio River barge, and while nearly all of the coal arriving from Wyoming travels by rail, transshipment to barge at the Missouri River is an alternative for reaching southern Indiana power plants, though not currently used. Other commodities traveling between southern Indiana and points to the west do use this mode, such as Waste and Scrap, which moves between Indiana and Nebraska by barge.

Ultimately, the decisions made in the next several years concerning how to meet Indiana’s energy needs will have a bearing on the utilization of the State’s rail and waterway systems. If clean-burning natural gas and renewable energies become the preferred option, the use of rail to transport coal is likely to go into gradual decline as older power plants become antiquated. Alternatively, mandates to install scrubbers in Indiana power plants and other “clean coal” technologies are improving the outlook for coal mining in the State. The decisions made by Indiana’s energy providers to address the State’s future electricity requirements need to be monitored by policy-makers as they will have an effect on how the State’s freight transportation system is used.

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<sup>56</sup> Thomas F. Brady and Chad M. Pfitzer. *A Prescriptive Analysis of the Indiana Coal Transportation Infrastructure*. Center for Coal Technology Research, Purdue University, May 2007.

**Figure 6.1 Proposed Indiana Coal Corridor**

Source: Thomas F. Brady and Chad M. Pfitzer. *A Prescriptive Analysis of Coal Transportation Infrastructure*. Center for Coal Technology Research, Purdue University, May 2007.

## Agriculture

Agriculture and food are two interrelated industries. “Agriculture” represents the growing of crops (e.g., soybeans, corn, wheat) and the raising of livestock, while “food” represents the manufacture of the items commonly found on grocery store shelves (e.g., bread, juice, cheese, meat, soda, beer, etc.) other than fresh produce. Both agriculture and food use roadways, railroads, and waterways for inbound materials, as well as for transporting goods to more distant markets.

Indiana’s agriculture industry is the 13<sup>th</sup> largest in the country, producing crops and livestock valued at \$6.9 billion in 2006. While the State ranks fifth in the country in terms of the number of hogs, Indiana’s agriculture industry, based on value, is led by crop production (e.g., corn and soybeans). In 2006, the value of crops grown in the State reached \$3.9 billion, ranking Indiana ninth in the nation.

Indiana, joined by Iowa, Illinois, Nebraska, and Minnesota, is one of the nation's top-tier growers of corn, producing nearly one billion bushels in 2007. Historically, there has been a slight upward trend in Indiana corn production since 2000 and the State generally accounts for about eight percent of the nation's corn harvest (See Chapter 4 for additional discussion). With the expanding use of ethanol which uses corn as its primary feedstock and increasing worldwide demand for corn as an animal feed, Indiana's corn production increased markedly in 2007. As of the middle of 2008, there were seven ethanol plants operational in Indiana, six under construction, and four proposed. All but one of the seven operating plants opened within the past two years. Upon completion, the six plants currently under construction will more than double the State's current ethanol production, which is expected to exceed 1.1 billion gallons by the end of 2009.<sup>57</sup> These demand factors (animal feed and ethanol production), combined with higher prices being commanded by corn, are likely to push Indiana's corn harvest up in coming years. Corn is grown abundantly throughout most of Indiana, but the highest production levels are found in the northwestern (Benton, White, Montgomery, and nearby counties) and extreme southwestern parts (Knox County) of the State.

After corn, the second leading crop grown in Indiana is soybeans. Indiana ranked as the fourth largest grower of soybeans in the United States in 2007, following Iowa, Illinois, and Minnesota. Indiana's soybean harvest, however, fell to 211 million bushels in 2007 after reaching historic highs between 2004 and 2006. Indiana's soybean harvest has been trending slowly upwards since 1990 and generally fluctuates between 200 million and 300 million bushels per year. Indiana's share of total U.S. soybean production, ranging from eight to nine percent, is similar to the State's share of the nation's corn harvest. Long term, demand for Indiana's soybeans will be stimulated by factors similar to those that are driving up production for corn – renewable fuels and worldwide demand for both corn and soybeans to be used as feeds or processed into food products. Five plants are currently operational in Indiana to refine soybeans into biodiesel fuel.<sup>58</sup> A plant in Claypool (Kosciusko County), opened in 2007, is the largest biodiesel production plant in the world and consumes a large portion of the soybeans grown in Indiana. At the center of the nation's agricultural belt and with its manufacturing expertise, Indiana will continue to be an attractive state for developing renewable energy plants in coming years. These trends will encourage soybean and corn cultivation to increase in Indiana (and other Midwestern states) in the future. Soybeans are grown throughout Indiana, with the largest concentrations of acreage and production located in the northern part of the State.

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<sup>57</sup> Biofuels Indiana. <http://www.in.gov/isda/biofuels/>, accessed August 21, 2008.

<sup>58</sup> Indiana Department of Agriculture

Indiana and the Midwest for decades have been the breadbasket to the world, exporting huge volumes of grain to countries with inadequate tillable land or inefficient agricultural sectors. The value of Indiana agricultural exports reached \$2.1 billion in 2006 and has been growing substantially in recent years. Indiana's agricultural exports are the 10<sup>th</sup> highest in the nation. The State is the 5<sup>th</sup> ranking exporter of feed grains (includes corn) and is 4<sup>th</sup> in soybean exports. Indiana also is a top 10 exporter of poultry products, seeds, and live animals/meat.

The value of Indiana's food products output reached \$6.4 billion in 2006, ranking Indiana 14<sup>th</sup> among the states, and increasing by 39 percent between 1997 and 2006, a rate of increase similar to the national average. Food production is an important part of the Indiana economy, accounting for 7 percent of the State's manufacturing output. Within the food industry, Indiana is a national leader in the milling of grain and oilseeds (rank #4), bakeries and tortillas (#10), and dairy products (#14).

### *Logistics and Transportation Issues*

Freight transportation plays a crucial role in Indiana's food and agriculture industries. The agriculture industry ships goods that are heavy, bulky, and relatively low value per ton, and these products often must be shipped long distances to reach domestic and global markets. This means that transportation costs are a significant portion of the price of delivered shipments and products. For this reason, agricultural shippers stress the importance of lower-cost and reliable rail and barge transportation to maintain their competitiveness. Higher-cost truck transportation also is crucial for transporting key inputs (fertilizers, seeds, feed, etc.) to farms and to bring harvests to loading facilities, processing plants, and other markets.

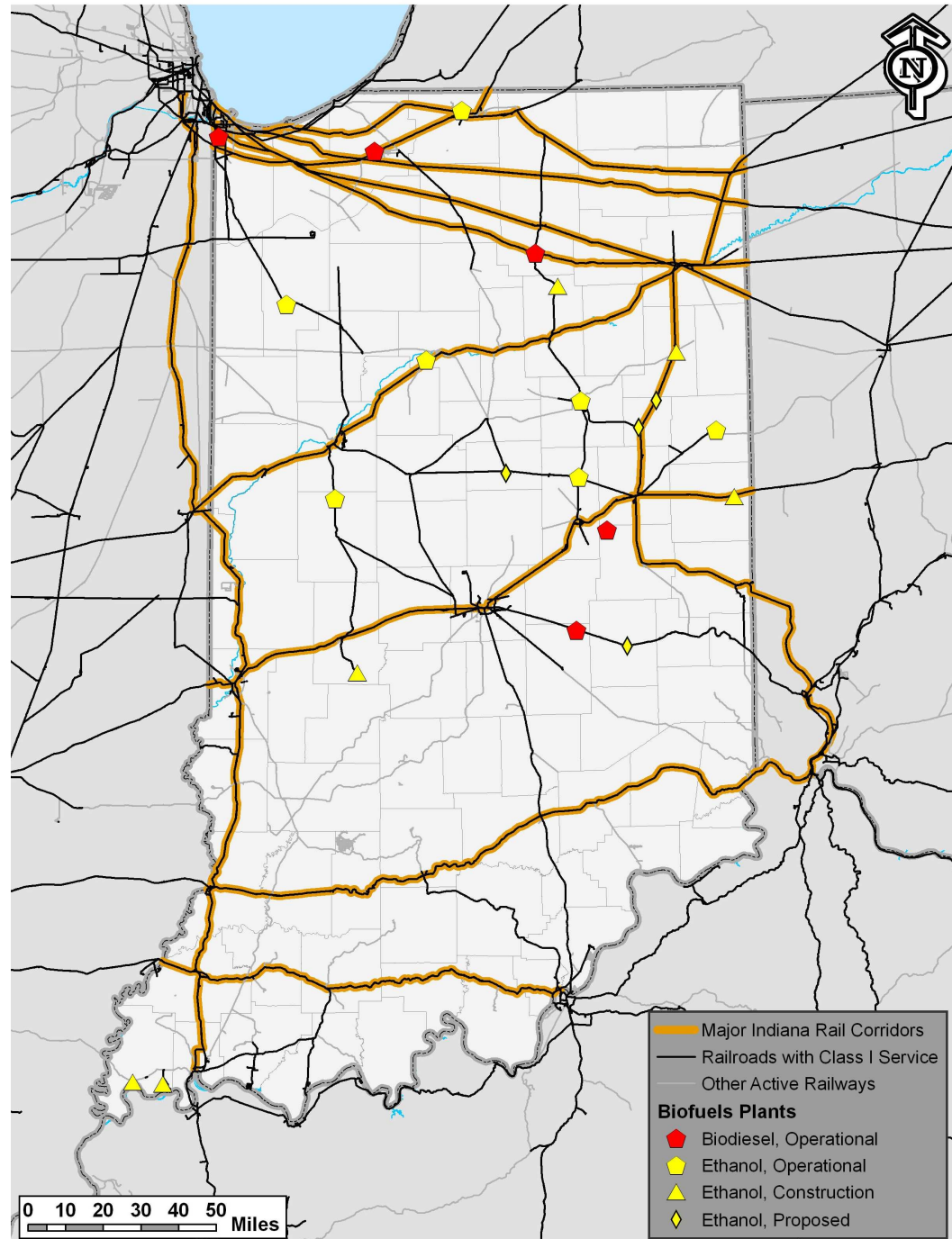
The agriculture industry has somewhat different highway-related needs than those of industries such as manufacturing and retail. The highway needs of the agriculture industry focus on linking farms to processing and shipping facilities, with an emphasis on the secondary and rural highway network. New biofuel facilities will further increase demand for corn and soy production in Indiana, and farm-to-factory transportation, much of it by truck, will increase as a result. This will add particular strain to Indiana's secondary highways. These highways have been identified by numerous public and private stakeholders as exhibiting a lower level of quality as compared with the Interstates.

Indiana farmers are in head-to-head competition with growers around the world such as Brazil in soybean and corn exports. The condition of the State's transportation infrastructure and availability of transportation services, particularly rail, for transporting soybeans and corn reliably and cost-effectively is important to the competitiveness of Indiana's agriculture and food sector. The efficient, reliable, and low-cost movement of Indiana's agricultural commodities to coastal gateways will be a determinant in how well the State can compete in overseas markets in the future.

Rail is important for shipping grains for export, but three distinct challenges face the agricultural sector in Indiana. First, shippers of bulk agricultural products face growing competition with the retail industry and coal/electric power industries for dwindling space on the national rail network. Transportation of manufactured goods has higher potential profit margins for the railroads, and the railroads have also invested heavily in coal transportation infrastructure in the Powder River Basin, so these commodities have some inherent competitive advantages over bulk agricultural goods in attracting interest from the railroads. In addition, a longstanding shortage of hopper cars threatens to constrain exports, particularly as the exploding ethanol and biodiesel industries drive increased overall grain production. This car shortage will disproportionately affect smaller producers without the resources to purchase their own equipment. Finally, the inability to accommodate industry-standard 286 thousand pound-per-axle bulk commodity cars threatens the ability of short lines to provide competitive service to grain producers. This is particularly problematic in the 16 Indiana counties without Class I service. Without access to adequate rail service, agricultural shippers must shift to trucks, increasing their transportation costs and making them less competitive with major agricultural producers in Argentina, Australia, and Brazil.

Indiana's central location and ample crop production will continue to position the state as a favorable choice for siting biofuel facilities, potentially driving demand for inbound corn and soy shipments from surrounding states. This, combined with increasing overseas demand for these grains, will also continue to increase demand for rail services, including short line and regional rail links to areas not served by primary lines. Figure 6.2 shows the locations of existing and proposed biofuels plants in Indiana. Nearly every existing and proposed facility is located along a Class I rail line. In addition, an ethanol plant is currently under construction on the grounds of the Port of Indiana at Mount Vernon.

The sharp increase in biofuels production poses an additional strain to a Class I network that is already nearing capacity. The type of freight movements generated by a biofuels plant, particularly the demand for raw materials, may be less than ideal for the Class I operators due to the relatively short haul distance. In the face of capacity constraints these shipments may be at risk of being shed in favor of more profitable business such as long-haul, high-value intermodal trains. The result would be a shift to trucks, which would drive up the price of refined biofuels, or increased reliance on short line and regional railroads which already face challenges with regard to hauling bulk goods. Growing demand for corn and soy as inputs to biofuel production underscores the economic importance of a robust network of short-line and regional railroads that can adequately support short-haul bulk goods transportation.

**Figure 6.2 Existing and Planned Biofuels Plants in Indiana**

Source: *National Transportation Atlas Databases (NTAD) 2008*. U.S. DOT, Research and Innovative Technologies Administration's Bureau of Transportation Statistics.

Finally, the Ohio River and inland waterway system also is very important to Indiana's agricultural industry as barges represent a low-cost alternative for shipping crops to the Gulf of Mexico for export, as well as for domestic distribution. Grain harvested in Indiana can be trucked to Ohio River barge ports



(e.g., Southwind and Clark Maritime terminals) and then barged to New Orleans for international distribution. However, the aging inland waterway lock and dam system is affecting system capacity and reliability. The upkeep of the inland waterway system will be a factor affecting the cost of transporting Indiana's agricultural products.

## **Stone and Construction Products**

### *Consumption and Production*

There are two main drivers for growth in the Indiana construction industry: 1) economic expansion; and 2) population growth. Economic growth stimulates new investment in commercial structures such as office buildings, industrial facilities, warehouses, laboratories, etc., while a growing population translates to strong demand for housing, retail centers, schools, and other public infrastructure. Due to its central location, Indiana also benefits directly from overall U.S. growth which further encourages the construction of warehousing, distribution, and transportation facilities within the State to serve national markets. Recently, the expansion of the Indiana tourism industry also has been a boon for the State's construction sector, particularly for hotels in the Indianapolis area.

The construction industry, until recently, has been growing in Indiana. The total value of construction contracts in Indiana was \$13.5 billion in 2006, down slightly from record levels reached in 2005. Indiana generally accounts for between 2.0 percent and 2.5 percent of total U.S. construction, as discussed in Chapter 4. Indiana's share has declined somewhat since 2000 as Sunbelt states such as Florida received an inordinate amount of construction work, mostly for housing. The construction industry is a primary end user of a range of supplies, including lumber, aggregate, and steel carried by rail, trucks, and barges. The timeliness of freight deliveries is crucial to the construction industry, making transportation reliability a primary concern. Congestion and delays add hours and costs to deliveries needed by construction contractors. Some construction inputs are perishable (e.g., ready-mix concrete only lasts two hours before thickening) and missed shipments can lead to work stoppages. Although construction is sensitive to economic cycles, including the economic uncertainties being experienced presently, the overall future growth trend for construction in Indiana is likely to remain positive as the State's population and economy resume a long-term trend towards moderate growth. As evidence of the cyclical nature of construction, Indiana housing permits were down 15 percent in 2007 .

Indiana quarries about 50 million tons of limestone per year, accounting for about five percent of the U.S. total (see Chapter 4). Shipments of Indiana limestone, gravel, and other stone are transported mostly by truck with much lower volumes carried by rail and water. Beyond its use as aggregate, the limestone produced in Indiana also is shipped nationwide and to markets throughout the world, including Italy, England, China, and Japan to be used as facing for buildings ("dimensional" limestone). Presently, Indiana dimensional



limestone is being used to construct the new Yankee Stadium in New York City. Indiana's quarries account for over two-fifths of U.S. production of dimensional limestone. Historically hauled by rail, Indiana dimensional limestone, due to its high value, is now mostly trucked long distances around the country.

### *Logistics and Transportation Issues*

Indiana's construction industry depends on rail and trucks to keep building and infrastructure construction sites supplied in a timely manner. Delays resulting from congestion can ruin concrete deliveries and raise costs. Limestone aggregate and limestone dimensional stone (for buildings) are major inputs to the construction industry and Indiana is a leading supplier of both. Rail (hopper cars) and trucks transport Indiana's limestone aggregate while flatbed rail cars and trucks carry Indiana's dimensional stone to major building projects across the country.

The mining and mineral extraction sectors entail large volumes of low-value shipments, and these commodities are traditionally strong candidates for movement by rail. Indiana's top trading partners for outgoing movements of stone, gravel, sand, and metals, are its four neighboring states, which collectively accounted for 37 percent of total outbound tonnage of these commodities from Indiana in 2007. Overall, nearly 30 percent of raw minerals and metals shipped from Indiana to other states in 2007 were transported by rail, barge, or other intermodal modes (including combined truck and water shipments), nearly equal to the national average for interstate shipments of these commodities<sup>59</sup>. If the mainline interstate rail corridors in Indiana reach capacity, as predicted by the AAR Study discussed in Chapter 3, shipments currently moving by rail may be shed in favor of higher value commodities, particularly intermodal and automobile shipments. This would threaten these important sectors of the Indiana economy.

### **Steel and Manufacturing**

Indiana's defining economic characteristic compared to the nation and most other states is the relative size of its manufacturing sector. In 2006, manufacturing accounted for well over one-quarter of Indiana's gross state product compared to 11 percent for the nation, as discussed in Chapter 4. In fact, manufacturing is more concentrated in Indiana than any other state based on relative contribution to gross state product.<sup>60</sup> Indiana's share of U.S. manufacturing jobs increased from 3.0 percent in 1982 to 4.0 percent in 2006. During the same period, Indiana's share of the nation's manufacturing output rose from 3.2 percent to 4.1

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<sup>59</sup> FAF2 Provisional Commodity Origin-Destination Data: 2007.

<sup>60</sup> Following Indiana (28 percent), manufacturing accounts for 21 percent of the economies of Wisconsin and Louisiana.

percent. This growth was fueled by the motor vehicles and motor vehicle parts and chemicals (includes pharmaceuticals) industries.

With its huge manufacturing sector commanding a disproportionately large part of its output, Indiana's economy is less dependent than the United States' economy on service-related industries, including retail, finance, real estate, business, and professional services; however, growth in these areas will have a significant impact on the growing freight industry in Indiana.

While employment in the Indiana manufacturing sector has been *dropping*, as discussed in Chapter 4, (similar to almost all other states), manufacturing output in Indiana has been *rising*. Indiana manufacturers have invested heavily in automation and sophisticated process technologies, reducing their need for labor while maintaining and increasing output. The drop in manufacturing employment also reflects the internal restructuring of manufacturing firms. To lower costs and maintain competitiveness, and focus on core competencies, manufacturers have been outsourcing functions, such as human resources, payroll, maintenance, engineering, and logistics services. This has shifted employment from manufacturing to other sectors, notably the service sector, which has seen continuing increases in employment. The number of manufacturing jobs in Indiana declined by 16 percent between 1997 and 2006, but manufacturing output, measured in the value of goods produced, increased by 18 percent over the same period.<sup>61</sup>

Looking at Indiana's manufacturing performance over the last decade, the State's improvements are broad-based. In real terms, manufacturing output increased in each of the State's four largest manufacturing industries – motor vehicles and parts, pharmaceuticals, fabricated metals, and food processing – between 1997 and 2006.<sup>62</sup> Output also surged within the quickly emerging medical equipment industry, rising by 88 percent, from \$2.2 billion in 1997 to \$4.2 billion in 2006. Although Indiana continues to rank among the top three states in the manufacture of steel,<sup>63</sup> the value of the state's steel production actually declined between 1997 and 2006 as a result of foreign competition and a period of consolidation within the industry.

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<sup>61</sup>Bureau of Economic Analysis, manufacturing GDP growth adjusted for inflation.

<sup>62</sup>Due to the conversion of the U.S. industrial classification system from SIC to NAICS codes, industry-specific data from the Economic Census and Annual Survey of Manufactures prior to 1997 is not directly comparable to more recently released data. For this reason, the industry-specific comparison is for the 1997-2006 period.

<sup>63</sup>The value of Indiana primary metal shipments is essentially the same as Ohio's and Pennsylvania's – these three states are far ahead of all other states in steel production.

Indiana's recent increases in U.S. manufacturing share have been led by the motor vehicles and medical equipment industries. Between 1997 and 2006, the State's share of the nation's motor vehicle-related production increased from 8.5 percent to 12.2 percent, while its share of medical equipment output rose from 5.8 percent to 7.6 percent. Growth in Indiana's motor vehicle industry has been fueled by the opening of a Toyota assembly plant in Princeton in 1998, increased production at the Subaru-Toyota facility in Lafayette, a new Hummer facility in Mishawaka, and the success of large suppliers, including Cummins in Columbus (diesel truck engines and power generation equipment), in competing in both the U.S. and world markets. Honda's recent decision to open an assembly plant in Greensburg, in southeastern Indiana, underscores the State's preeminent position within the motor vehicles industry. Geographically, Indiana is situated at the heart of North American motor vehicle production, and is within a one-day truck drive to dozens of assembly plants in the Midwest, Canada, and the U.S. Southeast.

While there is no doubt that Indiana has been affected by competition from other countries, the State's manufacturing sector has continued to thrive due to the State's ability to retain, grow, and attract technologically advanced manufacturers. However, Indiana's manufacturers must strive to stay in front of competitors from lower-cost countries, which will put price pressure on manufactured goods. Indiana manufacturers are succeeding through the adaptation of technology and quality in conjunction with aggressive efforts to control costs.<sup>64</sup>

Due to an economy with strong manufacturing and agricultural sectors, the value of Indiana's exports are equal to about 10 percent of the Indiana gross state product, a figure greater than the 8 percent average for the United States. With the recent surge in exports, Indiana exports have increased from about 7 percent in 2003 to 10 percent in 2007. Longer term, international trade is anticipated to account for a growing share of the U.S. economy, a trend that will likely be replicated in Indiana which, today, is more export-intensive than the U.S. overall.<sup>65</sup> Increased trade translates to higher freight volumes and more demands being put on the rail, air, and motor carriers serving the State.

### *Logistics and Transportation Issues*

Manufacturing is more dependent on transportation than most other industry sectors and counts on the reliability, flexibility, and connectivity provided by the rail, water, air, and road networks to produce and deliver products.

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<sup>64</sup>For example, while other countries make cheaper steel for commodity markets, Indiana competes successfully in the manufacture of high-grade, specialized steels.

<sup>65</sup> The value of U.S. merchandise exports is expected to increase from 7 to 8 percent of gross domestic product today to approximately 18 to 20 percent of GDP by 2030 based on Cambridge Systematics' analysis of Global Insight's forecast for total U.S. trade.

Manufacturers keep inventories low to reduce costs and this requires a dependable, multimodal supply chain.

Trucks and highways are the backbone of manufacturing logistics. The manufacturing sector makes extensive use of intermodal rail, water, and air cargo services, but it is trucking and the highway system that provide manufacturers with the capability to access a wide range of materials, labor, technology, and markets, and to integrate these elements into cost-effective, just-in-time manufacturing operations. Trucking and the highway system have allowed manufacturing to have door-to-door freight service, as well as direct access to international trade gateways. Indiana's trucking services and highway system must have the capacity to deliver freight reliably and at stable or lower costs to keep the State's manufacturing sector competitive. Underlining the importance of roadways to manufacturers, the overwhelming majority of business expansions in Indiana are within five to seven miles of an Interstate, and Interstate access is considered absolutely essential to the viability of a site.<sup>66</sup> Today, low congestion levels compared to neighboring Illinois and Ohio are considered an advantage for the State's manufacturers. However, increasing congestion in northwest Indiana, Indianapolis, and in other urban areas of the state could reduce this advantage.

Rail also is crucial to Indiana manufacturers, especially for shipping heavy goods (e.g., steel) and chemicals. While Indiana's rail links to the East Coast (and key international gateways) are considered excellent, rail moves to the West Coast are problematic as trains must often go through Chicago which slows down trips due to congestion. This adds to manufacturers' costs, potentially erasing the efficiencies and cost advantages of using rail. Improving the flow of rail traffic through the Chicago region or identifying alternative routes to the West Coast would add to the efficiency of Indiana's manufacturers by lowering costs and helping them reach distant markets more effectively.

Indiana's maritime ports, both on Lake Michigan and on the Ohio River, handle primarily bulk goods, including iron ore, steel products, and chemicals. On the Great Lakes side, the most significant port activities relate to the region's substantial steel industry, demonstrated by a variety of steel-related service industries on the site of the Port of Indiana – Burns Harbor, and several privately operated port facilities owned by the region's steel manufacturers.

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<sup>66</sup>Indiana Economic Development Corporation, interview.

## 6.2 MAJOR TRADE CORRIDOR GAPS AND NEEDS

### Interstate Trade and Commodity Mode Share

This section presents an analysis of commodity flows into and out of Indiana, based on data from the Freight Analysis Framework version 2 (FAF2). The analysis examines major trading corridors, the differences in mode share between corridors, and expected areas of significant growth. The purpose of the analysis is to identify any anomalies that might be caused by deficiencies in Indiana's transportation network, and to predict the future needs of the system.

FAF2 data divides commodities into 43 different categories, many of which are similar to one another in terms of their origins, manufacturing processes, or transportation-related characteristics. These 43 commodities were aggregated into 12 *commodity groups* for this analysis. The commodity groupings are presented in Table 6.1.

**Table 6.1 Commodity Groupings for FAF2 Analysis**

FAF2 Commodity Category	Commodity Group
Basic chemicals	Chemicals and Fertilizer
Chemical products and preparations, n.e.c. <sup>1</sup>	Chemicals and Fertilizer
Fertilizers	Chemicals and Fertilizer
Coal	Coal
Alcoholic beverages	Food and Food Products
Meat, fish, seafood, and their preparations	Food and Food Products
Milled grain products and bakery products	Food and Food Products
Other prepared foodstuffs	Food and Food Products
Tobacco products	Food and Food Products
Animal feed and products of animal origin, n.e.c. <sup>1</sup>	Grain, Feed and Livestock
Cereal grains	Grain, Feed and Livestock
Live animals and live fish	Grain, Feed and Livestock
Logs	Logs
Articles of base metal	Manufactured Goods
Electronics, electrical equipment, and office equipment	Manufactured Goods
Furniture, mattresses, lamps, lighting fixtures	Manufactured Goods
Machinery	Manufactured Goods
Miscellaneous manufactured products	Manufactured Goods
Motorized and other vehicles (including parts)	Manufactured Goods
Nonmetallic mineral products	Manufactured Goods

FAF2 Commodity Category	Commodity Group
Paper or paperboard articles	Manufactured Goods
Pharmaceutical products	Manufactured Goods
Plastics and rubber	Manufactured Goods
Precision instruments and apparatus	Manufactured Goods
Printed products	Manufactured Goods
Pulp, newsprint, paper, and paperboard	Manufactured Goods
Textiles, leather, and articles of textiles or leather	Manufactured Goods
Transportation equipment, n.e.c. <sup>1</sup>	Manufactured Goods
Wood products	Manufactured Goods
Base metal	Metals and Minerals
Metallic ores and concentrates	Metals and Minerals
Nonmetallic minerals, n.e.c. <sup>1</sup>	Metals and Minerals
Mixed freight	Mixed Freight
Unknown	Mixed Freight
Other agricultural products	Other Agricultural Products
Coal and petroleum products <sup>2</sup>	Petroleum Products
Crude petroleum	Petroleum Products
Fuel oils	Petroleum Products
Gasoline	Petroleum Products
Building stone	Stone, Sand, and Gravel
Gravel and crushed stone	Stone, Sand, and Gravel
Natural sands	Stone, Sand, and Gravel
Waste and scrap	Waste and Scrap

1. Not Elsewhere Classified.
2. According to FAF, this category is “primarily natural gas, selected coal products, and products of petroleum refining, excluding gasoline, aviation fuel, and fuel oil.” For this reason it was grouped with the Petroleum Products category, rather than with Coal. Significant commodity flows in this category travel by pipeline.

Indiana’s FAF2 data are divided into three geographic regions: The Indiana portion of the Chicago region; the Indianapolis region; and the remainder of the state. For Indiana’s trading partners, less urban states may consist only of one large region, while other states may have larger numbers of urban regions. The “remainder” region in states that consist of more than one region may be thought of as representing the more rural portions of the state, although in many cases, including Indiana, a number of smaller cities are also included in that region.

### *Top Overall Trading Partners, Present and Future*

By weight, Indiana's top domestic trading partners (including international trade gateways) are its four neighboring states. Illinois, Ohio, Michigan, and Kentucky collectively accounted for nearly 60 percent (by weight) of all interstate trade with Indiana in 2002, according to FAF2. Illinois alone accounted for 27 percent. The next largest trading partner in 2002 was Louisiana, driven by transportation of petroleum products (primarily by pipeline). Rounding out the top ten trading partner states are Minnesota, New Jersey, Wyoming, West Virginia, and Georgia. These trading corridors represent a variety of high-volume bulk goods, chiefly minerals and metals (Minnesota); petroleum (New Jersey); coal (Wyoming and West Virginia); and grain and feed (Georgia). A considerable share of these movements also relate to international trade, particularly those involving petroleum products and grain, feed, and livestock. These top ten trading partners collectively represented 78 percent of interstate trade with Indiana by weight in 2002.

In 2035, FAF2 forecasts indicate a substantial shift in the states with which Indiana trades. Indiana's four neighboring states are projected to maintain their top ranking through 2035, with Illinois losing some share to the other three states, and all four ranging between 12 percent and 19 percent of total interstate trade with Indiana. Louisiana and Wyoming also remain significant, on the strength of their respective energy sectors. However, the remaining top ten states or districts in 2035 are all new to the list: Wisconsin, the District of Columbia, Tennessee, and Texas. Two of these areas are projected to see significant growth in petroleum flows (DC and Texas), Wisconsin has large forecasted growth in waste and scrap trade, and Tennessee increases its profile on the strength of grain and feed trade. These top ten trading partners are forecasted to collectively represent 80 percent of interstate trade with Indiana by weight in 2035.

In the larger scheme of things, Indiana's trade network is expected to be about as diverse in 2035 as it was in 2002, with 25 states representing 95 percent of trade, by weight, in both years. However, the total tonnage transported to and from these 25 states will more than double, from approximately 486 million tons in 2002 to over 1 billion in 2035. In spite of the fact that the rail and highway networks are both already approaching capacity in many locations, the FAF2 growth forecasts indicate continued reliance on these modes, which are expected to maintain a mode share of over 70 percent in 2035, up from 65 percent in 2002. Capacity expansion on these dominant modes will be essential, although some shifting of modes may also be possible. For example, several of Indiana's top trading partner states are reachable by water, including West Virginia, Wyoming, Louisiana, and Wisconsin. The maritime highways, and Indiana's major port facilities, have excess capacity to accommodate additional waterborne trade.

## *Analysis of Mode Share and Top “Commodity Corridors” by Commodity Type*

### Chemicals and Fertilizer

This is not a major commodity in Indiana by weight, and nearly 40 percent of the goods transported in Indiana in this category represent intrastate shipments. The top out-of-state trading partner is the Chicago region of Illinois, representing another 15 percent. Whereas nationally this commodity moves by truck over 70 percent of the time, chemical and fertilizer trade between Indiana and the Chicago region of Illinois has a *rail* mode share of over 55 percent.

### Coal

By weight, coal is the seventh most significant commodity in Indiana. According to FAF2, 77 percent of coal in Indiana moved by rail, the largest rail share of any of the twelve commodity groups. Coal accounted for nearly 40 percent of all tonnage transported by rail in the state. By weight, 38 percent of Indiana coal shipments were intrastate in 2002, and 38 percent of that moved by truck. By comparison, trucks represented less than 10 percent of the mode share for each of the top 16 most significant out-of-state coal trading partners, including corridors between Indiana and the neighboring states of Illinois, Kentucky, and Ohio. The top interstate trading partners for coal are Wyoming, West Virginia, and Illinois, with significant quantities (over 1 million tons annually) connecting with Montana and Virginia. Other states trading over 100 thousand tons of coal with Indiana in 2002 were Kentucky, Alabama, Pennsylvania, Ohio, and Michigan.

Rail was the overwhelmingly preferred mode in most cases. Notable exceptions are shipments between rural Indiana (non-Indianapolis and non-Chicago regions) and the states of West Virginia and Pennsylvania, where over 80 percent and 98 percent of coal shipments, respectively, were transported by water. Almost one quarter of coal shipments between rural Indiana and rural Ohio moved by truck/rail intermodal, and nearly all shipments between the Indianapolis region and rural Kentucky moved exclusively by truck. This latter figure, representing almost 200 thousand tons, highlights the lack of high-capacity rail infrastructure between Indianapolis and Kentucky.

By 2035, FAF2 predicts that coal trade between Wyoming and rural Indiana will more than triple to almost 49 million tons annually, becoming the top corridor for coal trade with Indiana. Trade between Wyoming and the Chicago region of Indiana is the second busiest coal corridor in the 2035 forecast with an additional 8 million tons. Wyoming is expected to provide the vast majority of all of Indiana’s coal in the future, nearly all of it transported by rail. This enormous increase in coal trains between Indiana and the west would be unsustainable over the existing rail network, underlining the need for major capacity expansion and renewed efforts to bypass the Chicago rail bottleneck. Although FAF2 does not account for it, there is also significant potential for diversion to waterborne routes, both over the Ohio River and, potentially, across the Great Lakes, to avoid Chicago.



### Food and Food Products

This commodity group includes a variety of manufactured and packaged food products, beverages, tobacco, alcohol, and other related foodstuffs. Intrastate flows account for just over one third of all food products transportation in Indiana, with neighboring states contributing much of the remainder. There are 59 corridors with at least 100 thousand tons of food and food products shipped two or from Indiana. Among neighboring states (Illinois, Kentucky, Michigan, and Ohio), trucks generally carry 85 percent or more of the total tonnage. Trading partners to the east, including Pennsylvania, South Carolina, and the metropolitan regions of Baltimore and Atlanta, exhibit much higher rail mode share (86 percent in the case of South Carolina). In some cases this may indicate a high rate of international trade through these points, such as the major ports in Baltimore and New York. However, corridors without major ports, such as Tennessee, Atlanta, and rural Georgia (non-Atlanta and non-Savannah), also exhibit significant rail mode shares.

Major trade corridors for food and food products with either end in the Chicago region of Indiana tend to have higher truck mode share than corridors involving the same out-of-state location connecting with other parts of Indiana. This is likely an indication of Chicago's overloaded rail network. Among the trade corridors with over 100 thousand tons in 2002, four of the five that exhibit a significant truck/rail intermodal share (greater than 10 percent) are in California.

An important trend likely to continue in the future is the growth in international trade of food and food products. FAF2 demonstrates this trend by predicting that by 2035 three of the top 15 trade corridors for this commodity will be between rural Indiana and the port regions of New York, Baltimore, and South Carolina.

### Grain, Feed, and Livestock

Of the 65 million tons of grain, feed, and livestock transported in Indiana in 2002, nearly 40 percent consisted of in-state movements, representing transfers from farms to grain processing facilities, meatpacking plants, biofuels facilities, and other locations. The largest out-of-state corridors are those linking the Illinois and Indiana sides of the Chicago region, and the rural portions of the two states. Trade between Indiana and Illinois represented another 16 percent of total grain, feed, and livestock transportation in Indiana in 2002. Trade across the state line in the Chicago region was over 90 percent by truck, and trade corridors involving either of the states' Chicago regions, or the Indianapolis region, was likewise truck-oriented. On the other hand, trade between the remainder of Indiana and non-Chicago parts of Illinois was much more rail-dependent, with a rail share of 70 percent or more.

Many of the other top trading partners for grain, feed, and livestock are states on the eastern seaboard and gulf coast, such as South Carolina, Georgia (both Atlanta and the remainder of the state), Louisiana, Alabama, North Carolina, and even Florida. In most cases, transportation between Indiana and these more

distant destinations is overwhelmingly by rail, with a 90 percent or higher mode share. The one significant exception is New Orleans, where the mode share to and from Indiana is almost 75 percent waterborne. Neighboring states of Kentucky, Ohio, and Michigan also appear prominently, and trade with these states is almost 100 percent by truck in most cases.

The most significant predicted change for 2035, other than a near doubling of grain, feed, and livestock transport in Indiana, is a much more prominent role for southeastern states in trading these commodities with Indiana. While intrastate movements maintain their prominence and similar share of the total (41 percent), Atlanta and rural South Carolina claim the top two interstate corridors. The states of South Carolina and Georgia are expected to account for nearly 20 percent of all grain, feed, and livestock transport originating or terminating in Indiana. Illinois's share of the market is forecasted to slip to around 14 percent, although the total tonnage between Indiana and Illinois will still grow by 70 percent.

### Logs

This commodity is primarily harvested and transported in-state. Intrastate movements account for nearly 60 percent of log shipments in Indiana, and these movements were nearly 100 percent by truck in 2002. Other top corridors primarily connect rural Indiana with rural and metropolitan regions of Indiana's neighboring states, and no one corridor accounted for even 300 thousand tons. These movements are also nearly 100 percent truck, with one notable exception: the corridor between the St Louis region of Illinois and the Chicago region of Indiana, in which the rail share of movements was over 98 percent. This likely reflects a single shipper operating unit trains over the very active rail corridor linking Chicago and St. Louis.

In the future, interstate transportation of logs is expected to gain in prominence, with in-state movements slipping to only 48 percent of the total. Trading partners, and the dominance of trucks for these types of movements, are predicted to remain largely unchanged in the future. The dominance of the truck mode for these types of movements is likely due to the relatively modest volumes carried into and out of Indiana, in comparison with other states that export enormous volumes of timber, primarily by rail.

### Manufactured Goods

Manufacturing is not only one of the most vital economic drivers in Indiana, it is also a sector that pumps enormous volumes of freight into the state's transportation network. Manufactured goods are second only to petroleum products in total tonnage transported in Indiana, and unlike the latter, the majority of these goods are transported by truck.

According to FAF2, approximately 45 million tons of manufactured goods transported in Indiana were intrastate, 36 percent of the total for these commodities. The largest out-of-state corridor was that linking the Indiana and Illinois sides of the Chicago region. This corridor alone represented 6.6 million

tons of freight, over 5 percent of the total. Among the next ten trading corridors, all connect either the Indianapolis or the remaining non-Chicago parts of Indiana with the state's immediate neighbors, and all ten of these corridors have a truck share of at least 85 percent and a rail share of no more than 6 percent. Of the 18 corridors with over 1 million tons transported, only two (St Louis, MO and Nashville, TN) are not immediate neighbors. Truck and rail intermodal is a fairly insignificant mode in comparison with truck-exclusive and rail-exclusive modes, although intermodal movements are somewhat more prominent in corridors that connect with international ports, such as Los Angeles.

Manufactured goods transportation in Indiana is predicted by FAF2 to increase by 134 percent between 2002 and 2035, to a total of nearly 300 million tons in the future year. This represents the third largest percent increase and second largest absolute increase among the twelve commodity groups. Out-of-state trade is expected to gain in prominence, with the dominance of the Chicago to Northwest Indiana corridor supplemented by growing corridors connecting non-Chicago and non-Indianapolis parts of Indiana with Detroit, Louisville, Columbus, and other parts of the states of Michigan, Kentucky, and Ohio. FAF2 predicts continued dominance of the truck-exclusive mode of transportation, an outcome that INDOT may be able to influence through proactive efforts to make intermodal services more accessible and more competitive in the state.

#### Metals and Minerals

Metals and minerals are a significant contributor to Indiana's economy, supplying many of its major manufacturing industries (including steel, automobiles, and electronics). Likewise, these bulk commodities are among the most significant components of Indiana's freight traffic. The number one trading partnership in 2002, ranking above even intrastate trade, is the corridor linking Northwest Indiana with Minnesota. This is largely due to Minnesota's substantial iron ore production, transported to Indiana by ship for use in its steel mills. This one corridor accounted for over 20 percent of all minerals and metals transportation in Indiana. After intrastate trade, which ranks second, there are nine other corridors with over 1 million tons of minerals and metals transported, and all but two involve neighboring states.

Generally, there is at least a small rail share even along short corridors (9 percent between non-Chicago, non-Indianapolis points in Indiana, and Detroit, for example), and the rail share increases substantially with more distant connections, such as Iowa (76 percent). There are also a number of corridors with very high shares of intermodal connections involving water. This is likely to appear when the commodities are transported long distances over water, with trucks or rail used to transport them from dispersed extraction locations to ports.

Minerals and metals transportation in Indiana has the lowest FAF2-projected growth rate of any of the twelve commodity groups, at 12 percent. The most significant individual corridor shift is the aforementioned Northwest Indiana to Minnesota corridor, which is expected to decline significantly. In its absence,

Indiana's immediate neighbors become the state's most significant trading partners, particularly the Chicago region of Illinois, various parts of Michigan, and rural portions of Ohio and Kentucky. Given the relatively short distances of these corridors, trucks are expected to carry a significant portion of this freight, with rail having its strongest share of the market on corridors between Indiana and Ohio.

#### Mixed Freight

Mixed freight includes "items (including food) for grocery and convenience stores, supplies and food for restaurants, hardware or plumbing supplies, office supplies, and miscellaneous." It also includes other "unknown" items for this analysis. Because of the nature of this type of freight, it is generally transported over short and medium distances, almost exclusively by truck. Of the top 30 interstate corridors, all but three involve origin and destination pairs connecting Indiana to one of its four neighboring states, and every corridor has a truck mode share of greater than 98 percent. Aside from significant growth projections (over 200 percent from 2002 to 2035), there are no major shifts in the freight landscape predicted for this mode.

#### Other Agricultural Products

This commodity group consists of fruits, vegetables, nuts, and all other crops other than cereal grains and animal feeds. Because of the nature of the goods transported, the relative diversity of origins and destinations, and varying degrees of perishability, this is an unusually multimodal commodity group, in that modes of choice vary widely across different corridors. Unsurprisingly, the top corridor is intrastate, and the mode for intrastate movements is 98 percent truck. However, the top interstate corridor is between rural Indiana and New Orleans, and goods in this corridor move by water 100 percent of the time. Movements to states like Georgia and Alabama are also among the top corridors, and these are primarily rail movements. One common pattern among all corridors is that in spite of the wide variety of modes between different corridors, in each corridor there tends to be one mode that dominates, carrying 70 percent or more of all tonnage. *Intermodal* is also a very uncommon means of transporting these commodities. Geographically, there is a wide network of origins and destinations, with nearly every region of the United States represented among the top 15 trading corridors.

The most significant change expected in 2035 is an increase in the prominence of the southeastern states of Georgia and Alabama as trading partners for agricultural products.

#### Petroleum Products

By weight, petroleum products, including crude oil, refined fuels, and related products, are by far the top commodity group transported in Indiana, with nearly double the tonnage of the number two commodity group (manufactured goods). Examining specific modes, however, petroleum is the top commodity in only two groups: pipeline (it captures over 95 percent of the state total for

pipeline transportation) and water. Given the commodity's dominance of the pipeline mode, and the fact that pipelines are built and operated by the private sector, this analysis focuses on the other modes.

In 2002, there were over 35 million tons of intrastate shipments of petroleum products in Indiana carried by truck alone. At just over 4 million tons, the next highest volume carried by truck was over the Chicago (IN) - Chicago (IL) corridor, site of the largest refinery in the United States outside of the gulf coast region. There were numerous other corridors with over 100 thousand tons carried by truck, almost all of which involved the state's immediate neighbors, as well as Wisconsin. Several more distant destinations, including Detroit, Houston, Oklahoma, Virginia, and New York, exhibited substantial volumes transported by rail. There was also a significant volume, almost six million tons, carried within the state of Indiana over water, while no other trading corridor had significant maritime shipments.

In 2035, FAF2 predicts explosive growth along the Northwest Indiana to Chicago corridor, where truck volumes are expected to triple to over 11 million tons. By that future year, numerous "supercorridors" for truck transportation of petroleum products are expected to come into being, particularly connections with the states of Illinois and Kentucky, where total truck volumes are forecasted to exceed 15 million and 20 million tons, respectively.

#### Stone, Sand, and Gravel

This is a very significant group of commodities in terms of impact on Indiana's transportation network. Transportation of these commodities is generally characterized by large volumes moving over relatively short distances. In 2002 over 80 percent of all stone, sand and gravel transported in Indiana was moving entirely within the state, by far the highest intrastate share among the twelve commodity groups. These movements were over 98 percent by truck, a pattern expected to continue as intrastate movements increase in the future. Where possible, stone, sand, and gravel will be transported by non-truck modes, including both rail and maritime, even over short distances. For example, between rural Indiana and Louisville, the water mode share was 55 percent in 2002. Between rural Indiana and rural Illinois, the rail mode share was 25 percent. Between northwest Indiana and rural Michigan, barges accounted for over 90 percent of total tonnage. Barges also transport significant quantities of this commodity group on the Ohio River to destinations like West Virginia and the Pittsburgh region.

#### Waste and Scrap

More than any other commodity, waste and scrap lends itself to substantial rail mode share, even over short distances. Nearly 30 percent of the waste and scrap transported in Indiana moves between the Indiana and Illinois portions of the Chicago region. Of this, 53 percent moves entirely by rail, and another 14 percent by truck/rail intermodal. Even among intrastate movements, rail has almost a 10 percent mode share. Other top corridors include rural Indiana to

Cleveland, 80 percent by rail; rural Indiana to Chicago, Illinois, 100 percent by truck; rural Indiana to rural Ohio, 44 percent by rail; and rural Indiana to Detroit, 51 percent by rail. The anomaly of flows from rural Indiana to Chicago, Illinois moving entirely by truck is common across multiple commodities, and underlines shortcomings of Indiana's short line rail network, particularly its ability to accommodate heavy bulk goods, though for short distances multiple intermodal transfers between truck and rail are not economical.

In 2035, growth is expected to occur primarily along existing top corridors, but with a disproportionate emphasis on trucks. For example, in the busy Northwest Indiana to Chicago corridor, the truck share is predicted to increase from 34 percent to 87 percent. Wisconsin is expected to appear as a new top trading partner, with waste and scrap transported primarily by rail.

### **Intermodal Facility Needs**

Indiana currently hosts five intermodal facilities that handle trailer-on-flatcar (TOFC) and/or container-on-flatcar (COFC) traffic. They are located in Avon (CSX), Fort Wayne (NS), Evansville (CSX), Remington (Toledo, Peoria & Western Railway), and Indianapolis (Indiana Rail Road Company). Three of these five facilities are served by eastern Class I railroads. Where west coast services are offered, they are handled through interchange agreements with western railroads, principally UP and BNSF. Transit times from Indiana to the west coast tend to be significantly longer than from Chicago due to the lack of direct services. This time disparity is the reason why most intermodal shipments between Indiana and the west coast currently transfer between truck and rail in northeast Illinois.

#### *Upgraded Intermodal Services to the West Coast*

The two CSX Intermodal terminals in Indiana both offer scheduled intermodal services to the west coast. However, transit times are substantially longer than services from Chicago to those same west coast terminals. For example, containers shipped from Evansville to Portland take almost seven full days to arrive. From Chicago, the time is 3.5 days. The only west coast destinations offered from Indianapolis are Los Angeles and Oakland, and transit times are almost eight days to either destination. In practice, most intermodal shippers with freight moving between Indiana and points west will complete the Indiana portion of the journey via truck, transferring between truck and rail in the Chicago region. Not only does the long distance traveled by truck increase the overall cost of transportation, but growing congestion in the Chicago region is exerting a negative impact on travel time reliability. This is a continuing threat to the competitive advantage of various Indiana industries, particularly the manufacturing, warehousing, and distribution sectors.

One proposal for upgrading intermodal connectivity between Indiana and the west coast involves attracting a western railroad to directly serve an intermodal terminal in Indiana, eliminating the need for an east-west interchange in Chicago

or elsewhere. This would either require constructing a new intermodal terminal or upgrading an existing one, and would require utilizing trackage rights on an existing rail line or constructing a new one between Illinois and Indiana. One existing intermodal terminal with excess capacity is the Hoosier Lift in Remington. It currently operates well below its capacity of 35,000 lifts per year. It is served by the Toledo, Peoria & Western Railway (TPW), which interchanges with the BNSF in Illinois. With sufficient market demand, dedicated intermodal trains could be directly operated by BNSF or operated by the TPW from Remington to Galesburg, where it would interchange with the BNSF.

Another way to speed transit times to the west coast and improve reliability would be to increase capacity through the Chicago rail hub. One potential strategy is the use of corridors on the periphery of Chicago, such as the Elgin, Joliet, and Eastern Railway (EJ&E), which forms a loop from northwest Indiana to Waukegan, Illinois, passing through Joliet and the collar counties of Chicago. Canadian National Railway has recently purchased the line from U.S. Steel (the parent company of the EJ&E). Another potential route would be the TPW line, which could serve as a direct link between the NS and the BNSF, interchanging at Logansport, Indiana and Galesburg, Illinois, respectively.

These and other potential solutions all depend on a commitment and some level of financial investment by the private railroads, which in turn would depend on well-documented evidence of unmet demand for intermodal services. One indication of the growth potential for intermodal services comes from FAF2, which suggests that the demand for transportation of Manufactured Goods to and from Indiana by the “Truck and Rail” mode will nearly triple between 2002 and 2035.<sup>67</sup> Eight of the top 10 trading partner locations for Manufactured Goods in 2035 are west of Indiana. Given the State’s limited capacity to handle intermodal transfers between truck and rail, and the relatively low level of rail service to the west coast, much of the current and future demand are likely to be satisfied in surrounding locations, notably Chicago, Cincinnati, and Louisville.

Public support in the form of infrastructure investment and the facilitation of cooperative agreements between private parties may be a catalyst toward improving Indiana’s positioning with regard to intermodal freight. The Ports of Indiana is already authorized by the state to develop an inland port and has access to funding tools such as revenue bonds to finance capital projects. The Ports of Indiana may be in the best position to take the long-term financial risk associated with developing an intermodal terminal of the size needed to support dedicated west coast services, a necessary condition of attracting a railroad to operate such a service.

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<sup>67</sup> Note: These figures are based on the consultant’s analysis of FAF data, with “Manufacturing” representing the aggregation of 17 different FAF commodity categories, including electronics, textiles, electronics, pharmaceuticals, and machinery.

### *Short-haul Intermodal*

Among the recommendations of the 2002 Indiana Rail Plan was the suggestion that the State look into developing a short-haul intermodal rail corridor between Louisville and Chicago, following the I-65 corridor. Short-haul intermodal rail services attract shippers by providing high-frequency, reliable scheduled services over specific high-volume corridors, combined with rapid turnaround times for loading and unloading trailers at terminals (as short as 15 minutes). Such a service would likely be provided using articulated intermodal rail technology such as Canadian Pacific's Expressway service, which allows rapid loading and unloading of traditional non-reinforced trailers and platform rail cars. Triple Crown Services, which currently operates a hub in Fort Wayne, is another model of how potential short-haul intermodal services might operate. Triple Crown customers use specially designed RoadRailer trailers that are capable of riding directly on the rails, allowing rapid assembly of dedicated RoadRailer unit trains.

Analysis of the flow of commodities such as food products and manufactured goods indicates above-average truck mode share on flows that move within the greater Chicago region, as well as between Chicago and points to the near south and southwest, such as Kentucky. This is consistent with earlier observations about the need for improved rail services, including intermodal, along the I-65 corridor between Chicago and Louisville. Short-haul intermodal along the I-65 corridor would lower the cost of transportation between Indiana and the Chicago area, a particularly attractive corridor for shippers that currently dray containers to Chicago to connect with the railroads destined for the west coast. The Ports of Indiana could facilitate such a service by financing the needed terminal facilities and entering into an agreement with a railroad to operate the service.

### *Southwest Indiana Intermodal Terminal Feasibility Study*

In 2006, R.L. Banks & Associates completed the Southwest Indiana Intermodal Terminal Feasibility Study, commissioned by the Gibson County Chamber of Commerce. The study found that it was technically feasible, and that a market exists, to expand intermodal terminal capacity in Southwest Indiana to accommodate between 35,000 and 75,000 intermodal units per year, including the approximately 20,000 units processed at the existing CSX terminal in Evansville. These figures are based on potential demand, and are contingent upon either CSX, NS, or both, agreeing to operate new intermodal lanes from the region (currently the only available direct lane is from Evansville to Chicago). An updated in-depth study of intermodal facility development potential in southwest Indiana is currently underway.



## 6.3 HIGHWAY/TRUCK

### Modeling Assumptions and Methodology

The analysis of current and future vehicle flows and highway network conditions was performed using the INDOT Statewide Travel Demand Model (ISTDM). The ISTDM has a built-in truck forecasting component, which utilizes commodity flow forecasts and traffic volume data. The version of the model utilized for this analysis includes the following characteristics:

- The ISTDM is calibrated to a base year of 2000, and it forecasts volumes to 2030.
- The 2030 network provided by INDOT incorporates all existing and committed projects in Indiana's 2030 Long Range Transportation Plan, including all Major Moves highway projects and the completed I-69.
- The script *ISTDM4\_Model\_Batch\_updated\_for\_TC48\_540\_v5.rsc*, provided by INDOT, was used to run the model in TransCAD 4.8.

Refer to ISTDM model documentation for more information.

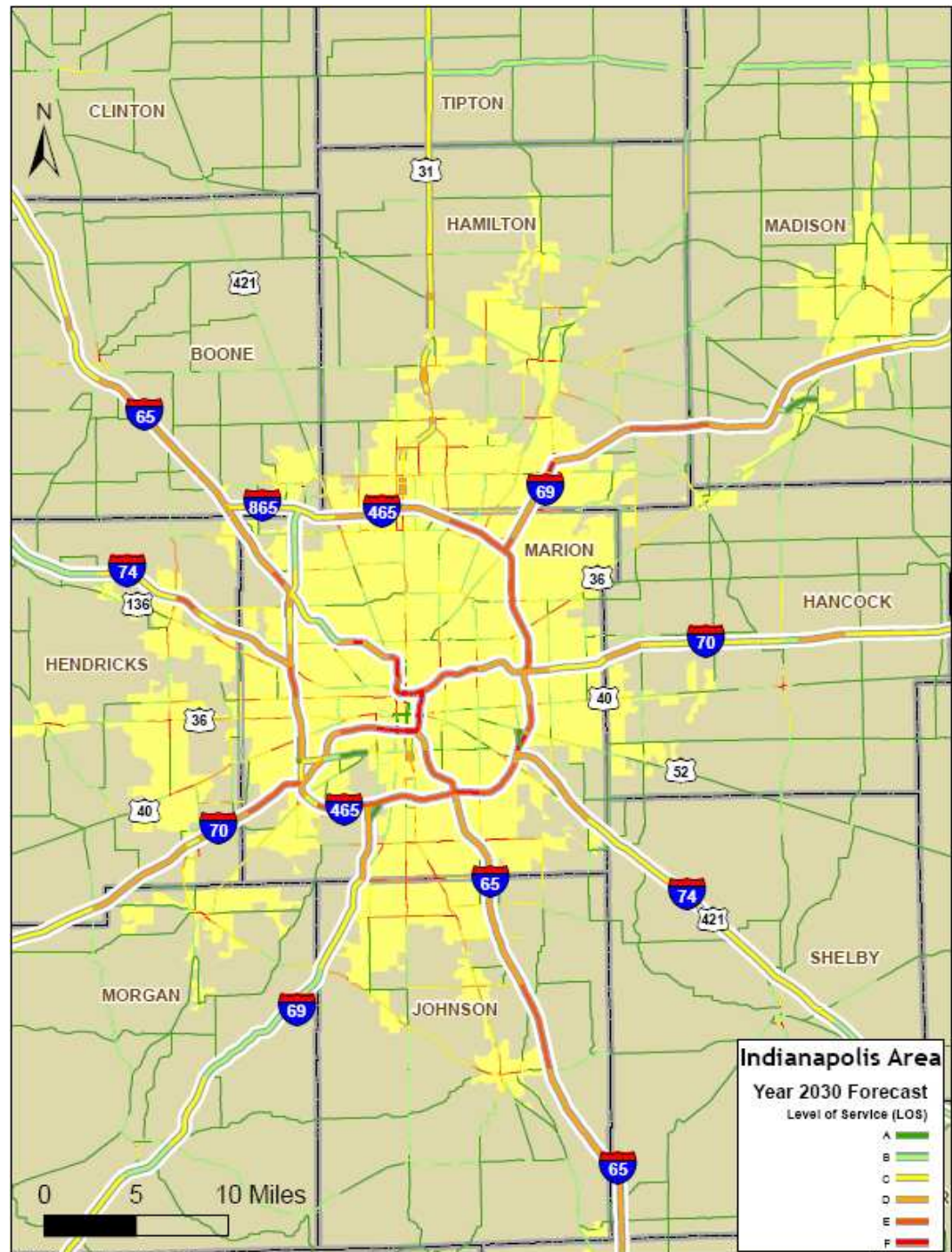
### Current and Future LOS Along Major Truck Corridors

Figure 3.19 shows the projected Level of Service (LOS) of Indiana's highway network in 2030 as derived from the ISTDM. By 2030 most Interstate segments are expected to operate at LOS C or worse. At the state-wide level, most of I-65 is expected to operate at LOS D or worse, with large segments of LOS E and F in the urban areas. A large increase of LOS E and F segments is expected in Northwest Indiana: the major national truck routes of I-80, I-90, and I-94 continue to be severely congested, despite the Borman being built to its maximum physical capacity, and other major highways such as US 41 are also expected to operate at LOS F.

In the Indianapolis area, every interstate highway is predicted to be at LOS D or worse (Figure 6.3). U.S. 31, starting in Westfield north of Indianapolis to Franklin south of Indianapolis, is forecasted to operate primarily from LOS D to F. U.S. 36 through Marion County and west to Danville is expected to be mostly at LOS D or worse. Overall, many of the principal arterials just outside of I-465 to the north, south, and west are forecasted to be congested. Many of these roadways match the corridors with heavy truck volumes now and in the future.

There are also a number of LOS E and F roadway segments around Louisville, Evansville, Bloomington, Fort Wayne, Kokomo, Lafayette, South Bend, Columbus, and Jasper. The ISTDM also indicates that Southeast Indiana, particularly along the SR 62/U.S. 50 corridor, will see degraded traffic conditions.

**Figure 6.3 Indianapolis Area Projected 2030 Highway Level of Service**



### Highway Interchange Issues

There are 354 INDOT-managed interchanges in Indiana. The issues most likely to impact freight movement through a highway interchange stem from insufficient capacity or substandard geometrics. Geometric issues have been

identified by trucking stakeholders in the past as an area of continued concern, and include inadequate turning radii, poor sightlines, short merges, and narrow lanes.

The INDOT Statewide Interchange Planning Study, updated in December 2007, examined 122 existing interchanges and ranked them according to anticipated future needs. The 232 other existing interchanges were not studied either because they were “recently constructed, studied, or modified” or because they were classified as “low-volume, low-accident, and low-growth.” In addition, interchanges along the Indiana Toll Road were not studied (and are not included in the tally of 354 INDOT-managed interchanges). Those that were studied were evaluated based on the following criteria: Accident severity, accident rate, 2030 ADT, 2030 LOS, PM peak hour percentage of trucks, geometric deficiencies, and 2000-2030 ADT growth rate. These criteria were appropriately weighted in the prioritization and ranking process. The study found that seven of the top ten priority interchanges in need of improvements are in the Indianapolis area. This is in spite of extensive recent work affecting interchanges along Interstates 65, 69, 70, and 465.

The interchange study also examined 15 new interchanges proposed by INDOT, all of which 15 were found to be feasible. Of these proposed new interchanges, six identify “economic development” as the major justification and benefit, which likely implies positive freight impacts (several address this explicitly). Of these six, two are in west-central Indiana, one is outside Cincinnati, one is in Evansville, and two are in Northwest Indiana. This does not include the planned I-69 extension from Indianapolis to Evansville, which will involve a number of new interchanges.

## **Major Unaddressed Bottlenecks and Unfunded Highway Needs**

### *I-69 Corridor and Access to Southwest Indiana*

In 2004 INDOT conducted a Market Research project to identify transportation issues of importance to stakeholders throughout the state. Every stakeholder interviewed as part of that effort, and many stakeholders interviewed for this project, identified the lack of an interstate highway connection between Indianapolis and Evansville as a major shortcoming of the State’s freight transportation network. Members of the agricultural and mining industries felt that improved truck access to major farming and mining centers in southwest Indiana would greatly increase the productivity of operations there. Carriers and manufacturers identified the route as a major gap in the north-south “NAFTA Corridor,” linking production centers in the Midwest with both Canada and Mexico. Even railroad operators suggested that the roadway link would improve their market in southwest Indiana by helping local businesses.

In 2007 the U.S. DOT designated the proposed I-69 corridor as one of six Corridors of the Future. The proposed corridor would extend the existing I-69, which runs from Indianapolis to the Canadian border at Port Huron, southbound

through Kentucky, Tennessee, Mississippi, Arkansas, Louisiana, and Texas, to the Mexican border, thus completing this so-called “NAFTA Corridor.” Approximately half of the Indiana section of the I-69 extension, from Evansville to the Crane Naval Surface Warfare Center, is funded through the Major Moves program, and construction has begun on some segments. The remaining unfunded section, between Crane and Indianapolis, is in the State’s Long Range Transportation Plan.

### *Illiana Expressway*

The Illiana Expressway is a proposed east-west limited-access highway linking I-65 in Indiana with I-57 in Illinois (potential extensions both east and west have been discussed but are not currently under study). The proposed facility would run parallel to the existing Interstate 80, passing through southern Lake County in Indiana and through northern Kankakee County and/or southern Will County in Illinois. The proposed expressway is specifically geared toward relieving truck volumes on the existing bistate routes of I-80/I-94, I-90, and US-30, as well as I-65 in Indiana. Preliminary estimates indicate that around 20 percent of the 2030 flow on the Illiana Expressway would be comprised of trucks.

The Illiana Expressway has wide support among freight stakeholders and regional planning agencies in northwest Indiana and the Chicago southland portion of Illinois, including the Northwest Indiana Forum (NWI) and the Northwest Indiana Regional Planning Commission (NIRPC). The project was a semifinalist for inclusion in the U.S. DOT’s Corridors of the Future Program (CFP), but was not selected. An Illiana Expressway Feasibility Study, led by INDOT, is underway. This study will build upon the work completed in the Phase I and Phase II CFP applications, and will include proposed alignments, traffic and revenue forecasts, cost, impacts, and financing options. The study is to be completed by July 2009.

### *Ohio River Crossings and Port Access*

Numerous stakeholders have cited inadequate highway capacity to cross the Ohio River, and this sentiment is also noted in the INDOT Long Range Transportation Plan, as well as the regional plans for the Evansville and Louisville metropolitan areas. In both regions, the need for improvements to overall cross-river freight mobility dovetails with the need for improved access to Indiana’s two publicly owned Ohio River ports in Mount Vernon and Jeffersonville.

### Southwest Indiana

In southwest Indiana, the four-lane bridge carrying US Highway 41 over the Ohio River south of Evansville is the only roadway crossing the river for over 30 miles in either direction. US-41 is cited by stakeholders as needing significant capacity and access management improvements on both sides of the river, and traffic flow between Kentucky and Evansville is constrained by the lack of a

limited-access connection. The proposed I-69 extension would merge with the existing I-164 circumferential highway around eastern Evansville, running the entire length of that highway before continuing south into Kentucky by way of a new bridge across the Ohio River. From there it would merge with the existing Pennyrile Parkway (officially federally designated as I-69 in June 2008).

The Port of Indiana – Mount Vernon is effectively inaccessible from the Kentucky side of the Ohio River, with the nearest available crossing being an arterial roadway 20 miles east in Evansville. Even on the Indiana side, access to the port is limited, with the nearest Interstate highways 20 miles north (I-64) and 20 miles east (I-164). To connect between Evansville and Mount Vernon, one must travel on SR-62 (Lloyd Expressway), a four-lane divided arterial with numerous at-grade intersections and driveways. Some access management improvements to Lloyd Expressway have been completed in recent years, with several additional projects planned including reconstruction of the interchange with US-41 and new interchanges west of Evansville. In addition, a western bypass around Evansville (“University Parkway”) is planned, and would create a limited access connection between Lloyd Expressway and the Interstate system (I-64, I-164, and/or I-69) that avoids downtown Evansville. The Evansville MPO also recommends coordination (and selected removal) of remaining traffic signals on Lloyd Expressway as a major improvement, and identifies freight-specific benefits of operational improvements to this important artery. The Ports of Indiana has also articulated the need for improved access to the Mount Vernon facility, which currently operates well below its potential capacity.

#### Greater Louisville Area

In the Louisville – Clark County area, two Interstate highways and one arterial roadway cross the Ohio River between Indiana and Kentucky. State and regional plans in both states identify serious issues of congestion and constrained capacity in the region, and ambitious plans are underway to add significant highway capacity. The \$4.1 billion worth of proposed improvements represent a bistate cooperative effort, calling for a new East End Bridge that will complete the northeastern quadrant of the I-265 beltway; a new downtown bridge to ease congestion on the existing I-65 crossings; and reconfiguring the congested and obsolete “Spaghetti Junction” interchange in downtown Louisville. The extension of I-265 to the southeast and across the Ohio River from the highway’s current terminus north of Jeffersonville would also provide direct Interstate access to the Port of Indiana – Jeffersonville from both states.

The Commonwealth of Kentucky lists the Louisville Bridges project as one of four “Mega-projects” across the Commonwealth. The I-265 extension and upgrades to I-65 account for over \$500 million of INDOT’s Major Moves program. The various projects are expected to take almost 20 years to complete,

with the first phase to open in 2014. Both Indiana and Kentucky have committed hundreds of millions of dollars, but significant funding remains uncommitted.<sup>68</sup>

### *I-70 Truck Lanes*

Interstate 70 is a vital freight artery through the Midwest. Average annual daily traffic (AADT) across the length of the highway already consists of over 21 percent trucks. In urban areas, this share rises to over 27 percent. In Indiana, trucks make up over 35 percent of AADT on I-70. Along with the other east-west corridors through the state, I-70 is vital to Indiana's economy: in 2002, trade with Illinois and Ohio represented 39 percent of all interstate trade with Indiana. The highway is already congested across over 50 percent of its length, and these conditions are expected to worsen considerably. Completion of the I-69 corridor would also potentially introduce additional traffic to I-70 in and around Indianapolis.

Plans are underway to dramatically increase freight capacity on I-70. In 2007, the highway was designated one of six Corridors of the Future by the U.S. DOT. The Corridors of the Future Program (CFP) application for I-70 submitted by Indiana, Ohio, Illinois, and Missouri proposes dedicated and segregated truck lanes along I-70 from the I-435 beltway east of Kansas City, Missouri to the Ohio/West Virginia border near Bridgeport, Ohio and Wheeling, West Virginia. The concept proposes adding four dedicated truck lanes to existing infrastructure, two in each direction, with at least one interchange per county providing access to the truck lanes and including, conceptually, truck staging areas. These lanes would present the opportunity to pilot size and weight increases on a facility dedicated to trucks. The dedicated truck lanes are viewed as a way to reduce congestion, improve safety, and offset the maintenance costs of general purpose lanes.

Next steps include a joint feasibility study to test the dedicated truck lane concept, freight market analysis to quantify demand for this route, and completion of an Environmental Impact Study. The four states, with Indiana as the lead, were awarded \$5 million for additional study of this corridor strategy.

### *Secondary Highway System*

A number of stakeholders interviewed for this study, as well as numerous previous INDOT studies, have observed a disparity in quality between Interstate and non-Interstate highways in Indiana. While Indiana has a very extensive network of Interstate highways, there are still substantial expanses of the state that depend on this secondary highway network. As discussed in the 2007 Long Range Transportation Plan as well as in the 2004 Market Research Report, high-

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<sup>68</sup> Community Transportation Solutions. "The Ohio River Bridges." <http://www.kyinbridges.com/project/schedule-and-cost.aspx>. Accessed October 27, 2008.

quality roadway systems are a significant determinant of a business's location decision, and with rising fuel prices it becomes ever more important that trucks be able to complete their trips efficiently.

Several strategies could help ameliorate freight mobility issues on the State's secondary highway system. First, INDOT could reprioritize its highway maintenance and preservation funding allocation process, in conjunction with designating statewide truck routes. A dedicated funding source for upgrading and maintaining significant truck routes could also be established. Developing and publicizing a statewide system of designated truck routes would provide a transparent and consistent method for INDOT to allocate highway funding to routes of regional importance, while at the same time offering business owners an indication of where they might consider locating or expanding their facilities. It might also lead to operational improvements for trucking companies (discussed further in Chapter 5).

## **Industry-specific Highway Gaps and Needs**

### *Manufacturing*

Manufacturing has been the mainstay of the Indiana economy for decades, gradually transitioning from the mass production of steel and automobiles in the 20th century to today's production of high-value pharmaceuticals, medical equipment, and advanced motor vehicle components. Today, Indiana's manufacturing sector employs approximately 565,000 people, 18 percent of all the state's jobs. Although the number of manufacturing jobs in Indiana declined by 16 percent between 1997 and 2006, manufacturing output (measured in the value of goods produced) increased by 18 percent over the same period.<sup>69</sup> Indiana's share of U.S. manufacturing jobs increased from 3.0 percent in 1982 to 4.0 percent in 2006, and the state's share of U.S. manufacturing output rose from 3.2 percent to 4.1 percent during the same period.

Trucking and the State's roadway system are central to Indiana's position of strength in the manufacturing sector. Trucking and the highway system provide manufacturers with the capability to access a wide range of materials, labor, technology, and markets, and to integrate these elements into cost effective, just-in-time manufacturing operations. Trucking and the highway system have allowed manufacturing to have door-to-door freight service, as well as direct access to international trade gateways. Underlining the importance of roadways to manufacturers, the overwhelming majority of business expansions in Indiana are within five to seven miles of an Interstate, and Interstate access is considered absolutely essential to the viability of a site.<sup>70</sup>

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<sup>69</sup> Bureau of Economic Analysis, manufacturing GDP growth adjusted for inflation.

<sup>70</sup> Indiana Economic Development Corporation, interview.



Low congestion levels compared to neighboring Illinois and Ohio create a competitive advantage for Indiana's manufacturers. The State will need to maintain that advantage or risk jeopardizing its strong position in the manufacturing sector. The significance of highway access in manufacturing location decisions underscores the need to emphasize a complete statewide freight network, including feeder highways, intermodal connectors, and a comprehensive network of secondary highways.

### *Retail*

The retail industry is characterized by the variety of products it delivers to millions of consumers. Products reach Indiana by various modes, typically reaching regional distribution facilities by rail or truck. A growing number of distribution facilities are locating in Indiana, including a concentration near Indianapolis International Airport. From these distribution facilities, the merchandise reaches retail shelves by truck. Today, retailers strive to reduce fixed inventory as part of their cost-saving efforts. This operational strategy to minimize stock levels and optimize labor places tremendous pressure on the freight transportation system to carry inventory responsively and predictably. Indiana retailers depend on reliable and predictable transit times across the State's highways.

The movement towards on-line, nonstore retailing has been a significant trend in the retail industry. Nationally, sales via the Internet increased to three percent of total retail sales in 2006. While still a small portion of total sales, these nontraditional channels increase the need for reliable freight services, particularly for direct home delivery provided by small parcel shippers. It also increases the need for regional distribution facilities shipping directly to customers, rather than in bulk to brick-and-mortar retailers. Online retailers such as Amazon.com have order fulfillment centers in Indiana and surrounding states, taking advantage of a central location and a relatively congestion-free highway system to expedite deliveries. The nonstore retail sector is certain to grow in the coming years, presenting both an opportunity and a challenge to Indiana's highway system as retailers look to locate additional distribution centers.

### *Agriculture and Biofuels Production*

The agriculture industry generally ships goods that are heavy, bulky, and relatively low in value per ton, and these products often must be shipped long distances to reach domestic and global markets. This means that transportation costs are a significant portion of the price of delivered shipments and products. For this reason, agricultural shippers stress the importance of lower-cost and reliable rail and barge transportation to maintain their competitiveness. Higher cost truck transportation is also crucial for transporting key inputs such as fertilizers, seeds, and feed to farms and to bring harvests to loading facilities, processing plants, and other markets. The agriculture industry has somewhat



different highway-related needs than those of industries such as manufacturing and retail. The highway needs of the agriculture industry focus on linking farms to processing and shipping facilities, with an emphasis on the secondary and rural highway network. These highways have been identified by numerous public and private stakeholders as exhibiting a lower level of quality as compared with the Interstates.

The burgeoning biofuels industry has the potential to significantly increase the demand for agriculture-related trucking services in Indiana. As of the middle of 2008, there were seven ethanol plants operational in Indiana, six under construction, and four proposed. All but one of the seven operating plants opened within the past two years. Upon completion, the six plants currently under construction will more than double the state's current ethanol production, which is expected to exceed 1.1 billion gallons by the end of 2009.<sup>71</sup> The State also has five plants currently producing soy-based biodiesel, including the world's largest (as of its opening in 2007) in Claypool. These new facilities will increase demand for corn and soy production in Indiana, and farm-to-factory transportation, much of it by truck, will increase as a result. This will add particular strain to Indiana's secondary highways. Top corn producing regions of the State are northwest Indiana (south of the Chicago metropolitan area) and southwest Indiana, and the top soybean production area stretches across northern Indiana.

### *Energy*

According to the Energy Information Administration, over 90 percent of Indiana's electric generation capacity comes from coal-fired power plants. Approximately 40 percent of the coal consumed in Indiana is produced within the State's southern coal fields, with the majority of the remainder coming from Wyoming, West Virginia, and Illinois. While almost all of the coal destined for Indiana from other states arrives by rail or barge, over 40 percent of intrastate coal movements are by truck. While there have been proposals to bolster the state's rail infrastructure to support intrastate coal movements, no changes are imminent. While there are a number of coal-fired power plants in the vicinity of Indiana's southwest coal-producing region, there are also plants around Indianapolis, Chicago, and throughout the Ohio River valley. As scrubber technology is installed in all of the State's plants, the potential to burn Indiana coal will increase substantially (Indiana coal has higher sulfur content and can only be burned in scrubbed plants). The remaining in-state coal supply is extensive, and increased production may result in considerable strain on the secondary highway system in southwest Indiana.

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<sup>71</sup> Biofuels Indiana. <http://www.in.gov/isda/biofuels/>, accessed August 21, 2008.

## Operational, Regulatory, and Policy Needs Relating to Trucking

### *Need for Additional Truck Parking*

Already identified in the 2007 Long Range Transportation Plan, and by numerous shipper and carrier stakeholders, is an insufficient supply of truck rest areas and other parking facilities throughout Indiana. This problem has been exacerbated by hours-of-service regulation changes that took effect in 2003. As stated in the Long Range Plan, existing full-service facilities are regularly filled to capacity, and overflow sites along the Indiana Toll Road lack electrical hookups, bathrooms, and other essential amenities. The lack of electrical hookups also leads to air quality and noise issues in those areas due to idling trucks.

The most recent national study of truck parking supply and demand was completed in 2002, prior to the hours-of-service regulation changes. That study concluded that Indiana was one of 12 states with an overall shortage in “total spaces” available, with a demand/supply ratio of 1.12. The study found a “commercial parking” demand/supply ratio of 0.99 in Indiana, indicating sufficient parking but little room for growth.<sup>72</sup> Given increases in freight traffic and changes in hours-of-service rules that require longer off-duty periods, it is likely that the commercial parking demand/supply ratio in Indiana is now greater than 1.0, indicating a shortage. Another study, funded by the Illinois DOT and led by researchers at the Illinois Institute of Technology, is currently underway to examine truck parking in northeast Illinois, which could affect trucks traveling to and from Indiana.

### *Lack of Statewide Designated Truck Routes*

A number of stakeholders, including shippers, carriers, and local and regional planning agencies, have suggested that Indiana would benefit from the establishment of a statewide network of designated truck routes. Such a network would begin with the Interstate Highway System, also including highways in areas not served by Interstates, feeder highways connecting Interstates with industrial areas, and alternate routes in congested areas. The latter of these concerns was most frequently raised in northwest Indiana, where several regional agencies have called for INDOT to produce truck route maps and highway signage.

As discussed in Chapter 5, designating truck routes could be part of a larger effort to improve the condition of significant freight corridors that use secondary highways. Truck routes would be designated through a data-driven scoring process, which could also be used to allocate funds.

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<sup>72</sup> “Report to Congress: Study of Adequacy of Parking Facilities.” Federal Highway Administration, 2002. <http://safety.fhwa.dot.gov/media/repctoc.htm>, accessed October 27, 2008.

In addition to designating truck routes for the purpose of funding prioritization, there are also operational advantages for carriers and regulatory advantages for state and local authorities. Many trucking industry stakeholders have complained of sporadic and uncoordinated truck restrictions, imposed and enforced primarily by local authorities. Some municipalities have enacted total bans on trucks. A statewide network of truck routes would foster regulatory cooperation between state and local authorities, promote consistency across jurisdictions, and ensure connectivity in the state's freight network.

### *Truck Size and Weight Regulations*

A number of stakeholders have advocated for a review of truck size and weight regulations in Indiana, with the goal of eventually permitting larger and heavier vehicles to operate in the State. This call has been most frequent in areas of northern Indiana in close proximity to Michigan because of that neighboring state's unique truck weight laws. Michigan allows much heavier vehicles than other states (up to 164,000 pounds); as a result, Indiana shippers traveling to and from Michigan must change vehicles at the state line or entirely fail to take advantage of the cost efficiencies of operating larger vehicles. In addition, trucks in Canada are permitted to weigh up to 138,000 pounds, 70 percent more than the 80,000-pound national standard in the United States. If permitted weights in Indiana were increased to meet that standard, heavy trucks could operate continuously through Michigan and into Canada, leading to a potential competitive advantage in international trade for Indiana-based shippers.

Indiana does permit heavy vehicles by right on a series of interconnected roadways in four northwest Indiana counties. Indiana's Extra Heavy Duty Highways run from Hammond to South Bend, connecting to Michigan as well. Trucks may weigh up to 134,000 pounds, subject to axle loading restrictions. This network of roads was originally created to support the steel industry, but has since been extended to serve other industries in the region, and to bridge the gap between shippers in northwest Indiana and the State's border with Michigan.

### *Driver Shortage*

A number of shipper and carrier stakeholders, including the Indiana Motor Truck Association, cite a chronic shortage of qualified commercial drivers as a persistent and serious problem in Indiana. Indeed, this has been a longstanding national problem. The American Trucking Association estimates that "there is still a need to recruit qualified drivers to fill an expected shortfall of 111,000 drivers by 2014."<sup>73</sup> At present the problem is tempered somewhat by the recent economic downturn and resultant decline in the demand for trucking services.

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<sup>73</sup> <http://www.truckline.com/AdvIssues/DriverShortage/Pages/default.aspx>

However, in the long term, INDOT or other State agencies should consider taking an active role in ensuring a vital workforce in the future, as trucking is a major industry in Indiana and a crucial component of many of the State's other key industry sectors. Trucking accounts for 2.4 percent of all employment in Indiana, far greater than that sector's 1.5 percent share of employment nationwide. The Indiana Motor Truck Association already partners with Ivy Tech Community College, a public institution, on a driver training and recruitment program. Numerous shipper and carrier stakeholders have lauded Ivy Tech's continued role in workforce development in Indiana.

### *High Cost of Litigation*

One stakeholder observed that a recent dramatic escalation in the cost of litigation and damages resulting from accidents involving commercial vehicles have increased the cost of doing business in general (not just in Indiana). While this appears to be a national trend, it suggests that there are significant secondary economic benefits to programs that improve highway safety or reduce dangerous roadway conditions.

### *Roadability Standards*

At least one trucking stakeholder with a container shipping operation expressed concern about the lack of regulatory oversight of the condition of containers and chassis. Over the course of a journey, containers and chassis are passed from one carrier to another multiple times. When mechanical defects or other safety issues are present, in most states the motor carrier currently transporting the equipment is liable for violations. As a result, equipment owners have less incentive to maintain their equipment in a state of good repair, and currently there is no standard regulatory framework for ensuring that this occurs. The trucking industry favors legislation that would shift the burden of responsibility from motor carriers to equipment owners, and establish a regular inspection and repair program. The Federal Motor Carrier Safety Administration (FMCSA) produced model legislation to this effect in 2006, and is currently in the process of developing a nationwide chassis registry. Enacting and enforcing laws governing maintenance and liability would still be the responsibility of the states.

## **Major Out of State Highway Issues**

The following topics and projects from neighboring states may have an impact on freight movements and proposed projects in Indiana.

### *Prairie Parkway (Illinois)*

The Prairie Parkway is a planned new highway running from I-80 in Minooka, Illinois, to I-88 in Kaneville, Illinois. If the Illiana Expressway is constructed and subsequently extended northwest to I-80, the Prairie Parkway could potentially act as a further extension of that same highway. The Illinois DOT has allocated

\$182 million in the 2009-2014 TIP for land acquisition, wetland mitigation, and upgrades to existing roadways at future interchange locations. The bulk of the construction cost for the Prairie Parkway has not been funded.

### *I-69 in Kentucky*

As discussed in Chapter 5, Kentucky carries a substantial portion of the proposed I-69 corridor. The majority of I-69 through Kentucky will utilize parts of three existing Parkways, and a portion of I-24. In June 2008, federal legislation officially designated these existing roadway segments as I-69. Upgrading remaining parkway sections, and constructing a new bridge across the Ohio River into Indiana, are expected to cost approximately \$1.5 billion. These improvements are as yet unfunded.

### *Other Kentucky Highway Issues*

According to the 2006 Kentucky Long-Range Statewide Transportation Plan, the state is falling increasingly behind on bridge and pavement maintenance. As of that document's publication, 25 percent of the state's Interstate pavement was rated poor, 29 percent of parkway pavement was poor, and 21 percent of bridges were functionally obsolete. All of these figures represent substantial and steady increases. According to the Plan, at current funding levels it would take 93 years to replace all of the bridges currently rated as structurally deficient in Kentucky.

The most severe highway congestion in Kentucky is in Louisville, where most of the metropolitan highway system was already congested as of 2004. Severe congestion in Louisville will affect freight movements into and out of Indiana, and to and from ports on both sides of the border. Chief among these is Louisville International Airport, home to the largest UPS shipping hub in the world. Conditions will likely improve after the reconfigurations and capacity increases included in the Interstate and bridge projects there.

### *Michigan Border Crossings*

In Michigan, one of the most pressing freight issues is international border crossing delay. Some of the nation's busiest and most congested border crossings are located in Michigan, including bridges in Detroit, Port Huron, and Sault Ste Marie, and a tunnel in Detroit. Planning for an additional span near the existing Ambassador Bridge between Detroit, Michigan and Windsor, Ontario, is underway, with completion anticipated by 2013.

### *South Suburban (IL) Freight Study*

A study of freight assets and needs in the Chicago Southland was recently completed, commissioned by the South Suburban Mayors and Managers Association (SSMMA). The South Suburban Freight Study found that poor east-west highway connectivity is a top freight concern in the Southland, which borders northwest Indiana. I-80, the only east-west Interstate through the area,

experiences significant congestion and currently handles over 30,000 trucks per day with limited alternate routes. Two of the other east-west corridors are US-6 and US-30, both of which have at least one deficient vertical clearance that limits freight movement. Much of the freight traffic currently traversing I-80 through the region represents through traffic, and thus could potentially benefit from a viable bypass route (such as the proposed Illiana Expressway). The region also faces other challenges similar to those of northwest Indiana, including extensive congestion, lack of truck parking facilities, numerous at-grade rail crossings, and an inconsistent and incomplete network of local truck routes.

## **6.4 RAIL**

### **Statewide Rail Infrastructure Needs**

#### *Current and Future Capacity of Primary Rail Corridors*

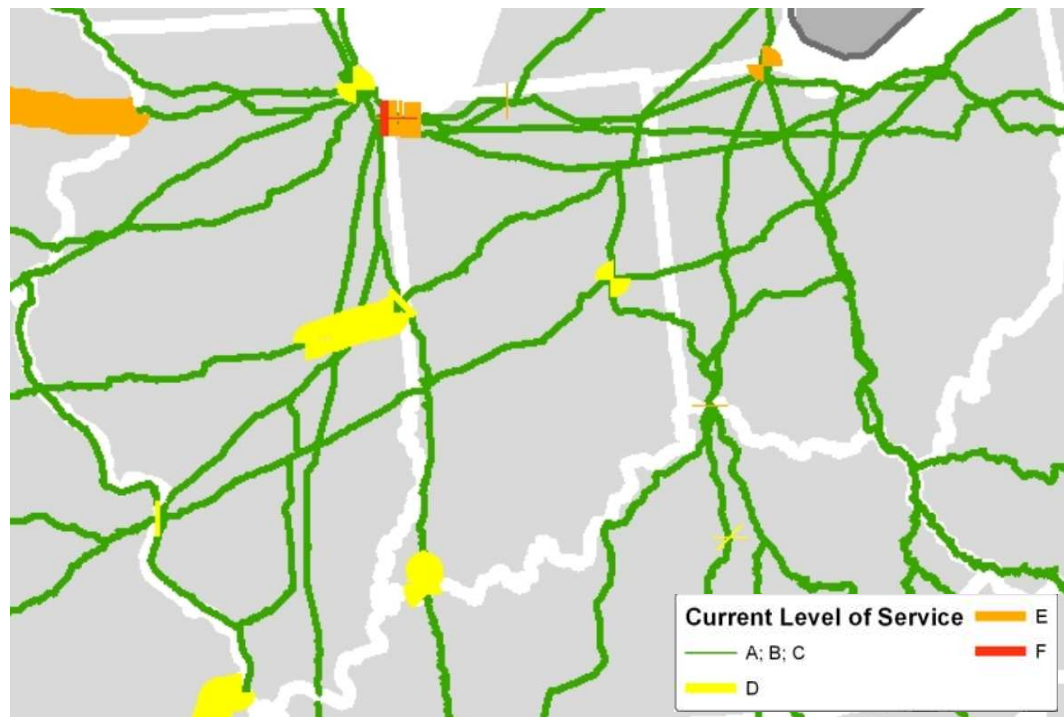
The *National Freight Rail Infrastructure Capacity and Investment Study*, prepared for the Association of American Railroads in September 2007 (“AAR Study”), examined current and future capacity on the national railway network in the continental United States, based on existing data and U.S. DOT nationwide freight forecasts. Focusing on primary rail corridors, the study estimated a needed investment of nearly \$150 billion in railroad capacity expansion to maintain rail’s existing market share of freight movements at current levels of service between 2007 and 2035. The majority of this cost would be the responsibility of the nation’s Class I railroads. This would be above and beyond the investment necessary to maintain the existing system.

As part of the study, a methodology was developed for estimating current and future Levels of Service (LOS) on rail corridors, based on the same principles used in defining highway LOS. In spite of Indiana’s proximity to the congested Chicago rail hub, most of the state’s major rail corridors are currently operating with excess capacity, as shown in Figure 6.4. The only portions of the 2007 Indiana primary rail network operating at LOS E or F are small portions of CSX and CN mainlines just outside of Chicago, and the junction in Muncie where major NS and CSX lines intersect. However, as Figure 6.5 shows, without investment in capacity expansion the majority of Indiana’s primary rail corridors will degrade to LOS E and F by 2035. This includes all but one of the east-west mainlines radiating from Chicago, the entirety of both north-south mainlines in Indiana, and the east-west NS line from St. Louis to Cleveland via Fort Wayne. An additional line of significance to Indiana but not included in the AAR Study is the east-west NS line connecting St. Louis and Louisville via Princeton and New Albany.

The network forecasts developed for the AAR Study are based on a U.S. DOT estimated 88 percent increase in freight rail demand nationwide between 2007 and 2035. Indiana’s share of this significant growth is driven by the volume of

pass-through traffic that Indiana railroads carry and the state's significant manufacturing base, coal consumption, and agricultural industry. While the degradation in LOS projected for Indiana is widespread across the continental United States, it is not universal. Generally, the worst conditions are forecasted to exist in the upper Midwest and the Southwest, while less severe conditions are projected for the east coast, the Gulf Coast, and the Northwest. Should conditions progress as forecasted in this base case scenario, Indiana would be at a significant economic disadvantage in terms of attracting and retaining freight-dependent industries, and the costs of numerous goods and services, most notable electricity, fuel, and agricultural products, could also rise significantly in response to spiraling transportation costs.

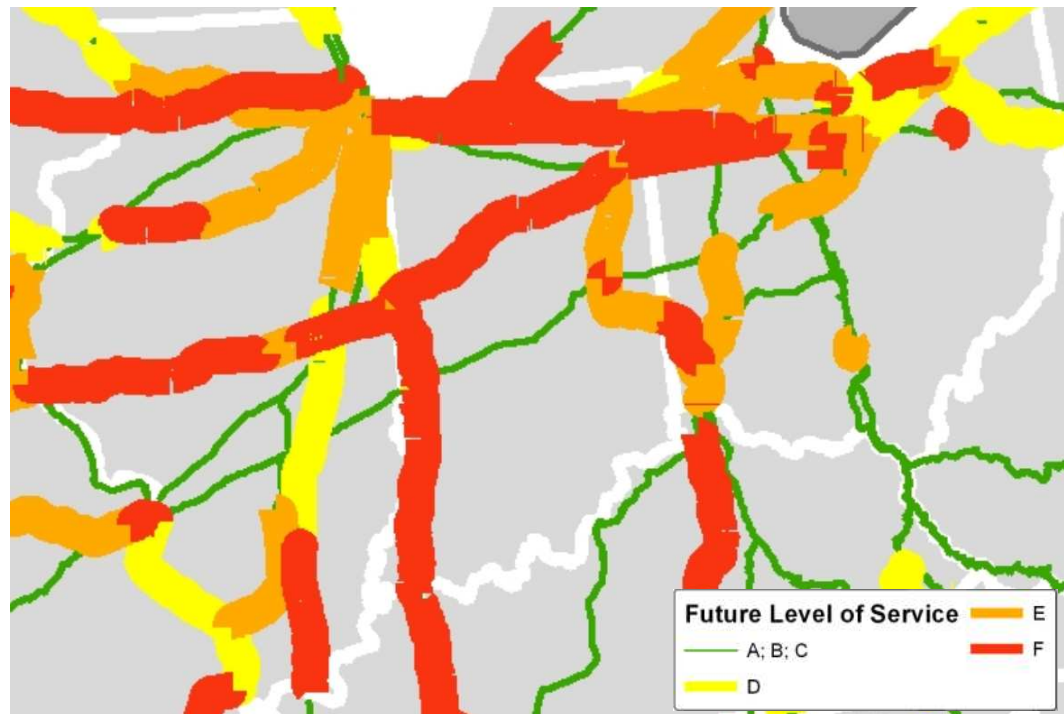
**Figure 6.4 Primary Rail Network Level of Service, 2007**



Source: *National Rail Freight Infrastructure Capacity and Investment Study*. Association of American Railroads, 2007.



**Figure 6.5 Primary Rail Network Level of Service, 2035**  
*Without Expansion*



Source: *National Rail Freight Infrastructure Capacity and Investment Study*. Association of American Railroads, 2007.

### *Short Line and Regional Rail Issues*

While the AAR Study examined the need for investment in the nation's major rail corridors, it did not address regional and short line railroad issues. As of 2008 Indiana is home to 39 non-Class I freight railroads, and 16 of the state's 92 counties are only served by these railroads (see Figure 6.6). The transition among the major railroads over the past several decades toward a "wholesale" approach to operations has resulted in challenges for regional and short line operators and for the markets they serve, as increasing volumes of goods are carried across a smaller number of mainline corridors.

One of the fundamental challenges to smaller operators, particularly those serving bulk shippers of commodities such as agricultural products, is the industry-wide transition to 286 thousand pound-per-axle rail cars. These cars are quickly becoming the industry standard among Class I carriers for the transportation of bulk goods, and a short line's ability to participate in the nationwide rail network is increasingly dependent upon its ability to accommodate them. Similarly, double-stack clearance is important to any railroad that aspires to offer intermodal container services. A lack of intermodal facilities in Indiana has been identified as a challenge by numerous stakeholders. All of Indiana's primary corridors can accommodate double-stack containers,



and numerous double-stack trains already pass through the state, particularly along the east-west NS and CSX lines across the northern edge of Indiana, as well as the NS line west to St. Louis and Kansas City. If a new intermodal facility were to locate on a line owned by a regional or short line, double-stack clearance would be critical.

The 2002 Indiana Rail Plan identified three criteria for determining the level of “difficulty” that a short line will experience “meeting long-term maintenance needs without public investment.” These factors are (1) number of annual carloads carried per mile of track, 50 being the minimum threshold for long-term financial health; (2) 286,000-pound capability; and (3) the short line’s overall traffic trends, and whether their business is growing, declining, or remaining unchanged. As of that study’s publication, it was also estimated that the cost of 286,000-pound upgrades alone would approach \$100 million for the state’s short lines.

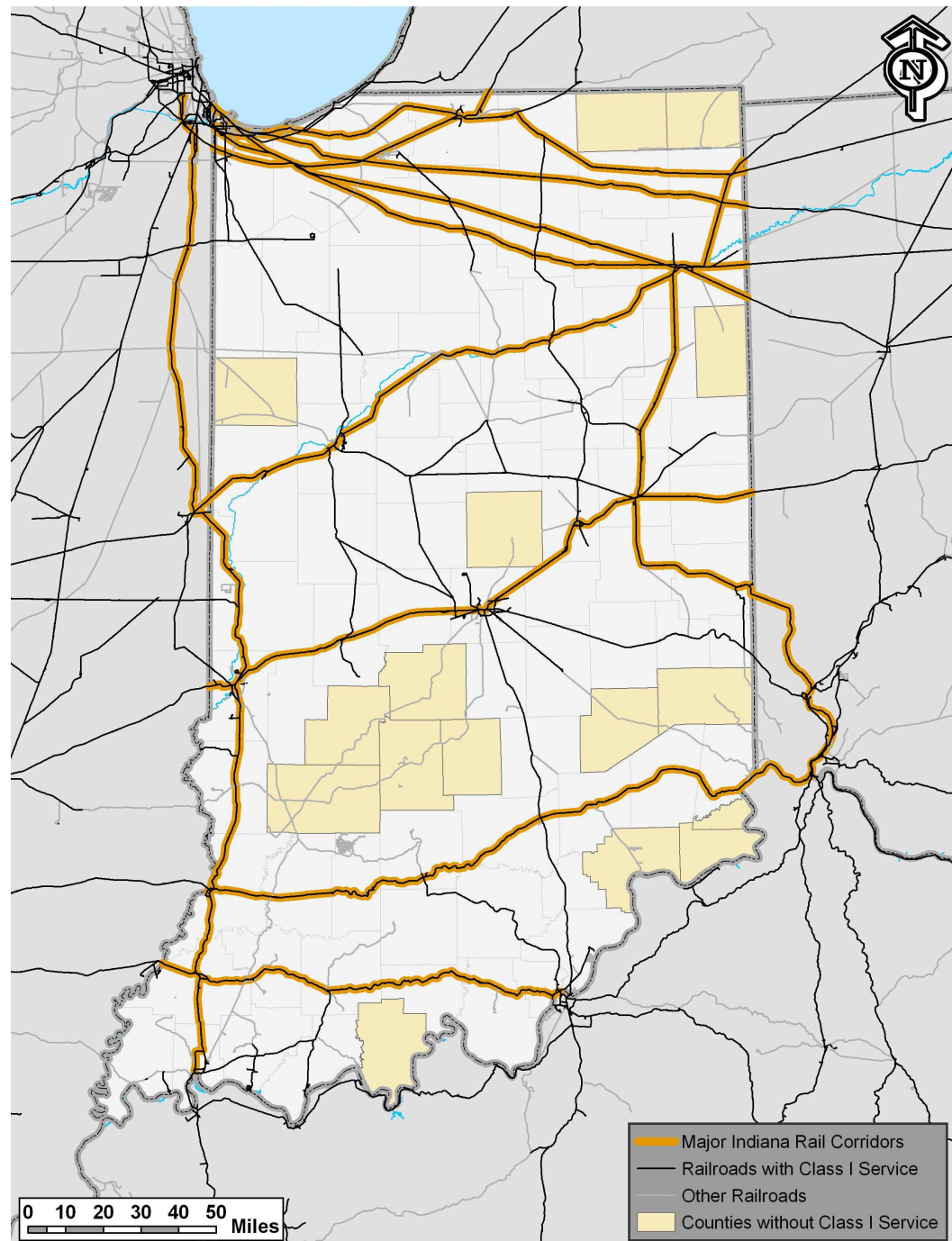
#### Industrial Rail Service Fund

The primary source of state assistance for infrastructure upgrades on short line railroads is the Industrial Rail Service Fund (IRSF), administered by INDOT. Established in its current form in 1997, the IRSF provides grants and low-interest loans to Class II and Class III railroads, as well as short lines operated by local port authorities. The IRSF is funded through 0.029% of the state sales tax. INDOT allocated grants totaling \$1.9 million in Fiscal Year 2007, and \$1.3 million in FY 2008. INDOT anticipates making \$1.7 million available in FY 2009. According to the IRSF FY 2009, 2008, and 2007 funding application documents, the goal of the program is to assist short lines to upgrade infrastructure to accommodate 286,000 pound rail cars, and to upgrade bridges and track to attract new businesses. In previous years, grants have focused on upgrading excepted track (limited to 10 miles per hour for freight, with passenger trains prohibited) and repairing bridges.<sup>74</sup>

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<sup>74</sup> *Industrial Rail Service Fund Grant Application Guidelines FY 2009*. Indiana Department of Transportation. Accessed December 8, 2008.  
Available at <http://www.in.gov/indot/files/FY09IRSF.pdf>

**Figure 6.6 Indiana Counties without Class I Rail Service**



Source: *National Transportation Atlas Databases (NTAD) 2008*. U.S. DOT, Research and Innovative Technologies Administration's Bureau of Transportation Statistics.

Note: Class I service is defined by any line that is owned by a Class I railroad, or over which at least one Class I railroad has trackage rights.

## Highway Access to Major Rail Intermodal Facilities

Access to major rail yards and rail/truck intermodal facilities is critical for the viability of intermodal transport in Indiana. Highway access roads to the NS Triple Crown facility in Fort Wayne and the Avon CSX facility in Indianapolis were designated as National Highway System (NHS) intermodal freight connectors of national significance.<sup>75</sup> U.S. 36, which connects the Avon CSX facility with I-465/I-74 in Indianapolis, is expected to be operating primarily between LOS D and F by 2030 (see Figure 6.3). Other intermodal access roads of national or state-wide significance are expected to operate at or above LOS C.

## Industry-Specific Rail Gaps and Needs

### *Manufacturing*

In an increasingly global economy, Indiana's manufacturing industries are shipping and receiving an ever-growing volume of goods and materials to and from overseas trading partners. The busiest gateways for foreign trade, particularly with Asian markets, are on the west coast. The Ports of Los Angeles and Long Beach alone handled nearly 40 percent of all containerized trade between the U.S. and foreign destinations in 2006.<sup>76</sup> Currently, goods transported by rail between Indiana and west coast ports must connect between eastern and western railroads, or more commonly, must be trucked to and from Illinois where they connect with western railroads. Both options become increasingly unpalatable as both highway and rail congestion around Chicago worsens. Two of Indiana's intermodal terminals offer shipping lanes to west coast ports: Evansville<sup>77</sup> and Remington.<sup>78</sup> However, both of these facilities are fairly small, offer infrequent service, and require interchanges in Chicago, making the cost advantage over trucking minimal, particularly in light of the disadvantage in transit time. CSX also began offering service in 2008 between the Port of Los Angeles and Avon and from Oakland to Avon. However, both of these services require a rubber-tire transfer in St. Louis. A direct rail link between Indiana and the west coast would be highly advantageous. Absent that, increased frequencies would make existing service more competitive.

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<sup>75</sup>NHS Intermodal Freight Connectors: Report to Congress, U.S. DOT, 2000.

<sup>76</sup> U.S. Army Corps of Engineers' Navigation Data Center. [http://www.iwr.usace.army.mil/ndc/wcsc/by\\_porttons06.htm](http://www.iwr.usace.army.mil/ndc/wcsc/by_porttons06.htm), accessed August 8, 2008.

<sup>77</sup> CSX Intermodal *International Service Matrix*, updated June 16, 2008.

<sup>78</sup> Indiana Rail Plan, 2002.

### *Mining and Mineral Extraction*

The mining and mineral extraction sectors entail large volumes of bulk, low-value shipments, making these commodities traditionally strong candidates for movement by rail. Indiana's top trading partners for outgoing movements of stone, gravel, sand, and metals are its four neighboring states, which collectively accounted for 37 percent of total outbound tonnage of these commodities from Indiana in 2007. Overall, nearly 30 percent of raw minerals and metals shipped from Indiana to other states in 2007 were transported by rail, barge, or other intermodal modes (including combined truck and water shipments), nearly equal to the national average for interstate shipments of these commodities<sup>79</sup>. If the mainline interstate rail corridors in Indiana reach capacity, as predicted by the AAR Study discussed in Chapter 3, shipments currently moving by rail may be shed in favor of higher value commodities, particularly intermodal and automobile shipments. This would threaten these important sectors of the Indiana economy.

### *Biofuels*

As of the middle of 2008, there were seven ethanol plants operational in Indiana, six under construction, and four proposed. Six of the seven operating plants opened within the past two years. Upon completion, the six plants currently under construction will more than double the state's current ethanol production, which is expected to exceed 1.1 billion gallons by the end of 2009.<sup>80</sup> The state also has five plants currently producing soy-based biodiesel, including the world's largest (as of its opening in 2007) in Claypool. Indiana's central location and ample crop production will continue to position the state as a favorable choice for siting such facilities, potentially driving demand for inbound corn and soy shipments from surrounding states. This, combined with increasing overseas demand for these grains, will also continue to increase demand for rail services, including short line and regional rail links to areas not served by primary lines. Figure 6.2 shows the locations of existing and proposed biofuels plants in Indiana. Nearly every existing and proposed facility is located along a Class I rail line. In addition, an ethanol plant is currently under construction on the grounds of the Port of Indiana at Mount Vernon. With an estimated annual production of 220 million gallons, this facility will be more than double the size of any other existing or planned ethanol plant in Indiana.

The sharp increase in biofuels production poses an additional strain to a Class I network that is already nearing capacity. The type of freight movements generated by a biofuels plant, particularly the demand for raw materials, may be less than ideal for the Class I operators due to the relatively short haul distance.

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<sup>79</sup> FAF2 Provisional Commodity Origin-Destination Data: 2007.

<sup>80</sup> Biofuels Indiana. <http://www.in.gov/isda/biofuels/>, accessed August 21, 2008.

These materials are usually carried in by truck, while biofuels themselves are shipped out by rail and truck.

In the face of capacity constraints these shipments may be at risk of being shed in favor of more profitable business such as long-haul, high-value intermodal trains. The result would be a shift to trucks, which would drive up the price of refined biofuels, or increased reliance on short line and regional railroads, whose challenges with regard to hauling bulk goods are documented earlier in this section. Growing demand for corn and soy as inputs to biofuel production underscores the economic importance of a robust network of short-line and regional railroads that can adequately support short-haul bulk goods transportation.

### *Bulk Agricultural Products*

The value of Indiana agricultural exports reached \$2.1 billion in 2006 and has been growing substantially in recent years. Indiana's agricultural exports are the 10th highest in the nation. The state is the 5th ranking exporter of feed grains (includes corn) and is 4th in soybean exports. Indiana also is a top 10 exporter of poultry products, seeds, and live animals/meat. Freight access to the country's international gateways on the East, West, and Gulf coasts is crucial to the competitiveness of the state's agricultural exports.

Rail is important for shipping grains for export, but three distinct challenges face the agricultural sector in Indiana. First, shippers of bulk agricultural products face growing competition with the retail industry and coal/electric power industries for dwindling capacity on the national rail network. Transportation of manufactured goods has higher potential profit margins for the railroads, and the railroads have also invested heavily in coal transportation infrastructure in the Powder River Basin, so these commodities have some inherent competitive advantages over bulk agricultural goods in attracting interest from the railroads. In addition, a longstanding shortage of hopper cars threatens to constrain exports, particularly as the exploding ethanol and biodiesel industries drive increased overall grain consumption. This car shortage will disproportionately affect smaller producers without the resources to purchase their own equipment. Finally, the inability to accommodate industry-standard 286,000 pound-per-axle bulk commodity cars threatens the ability of short lines to provide competitive service to grain producers. This is particularly problematic in the 16 Indiana counties without Class I service. Without access to adequate rail service, agricultural shippers must shift to trucks, increasing their transportation costs and making them less competitive with major agricultural producers in Argentina, Australia, and Brazil. Additional spur lines, increased frequency, and additional assistance upgrading existing rail lines could help provide adequate rail service to these areas.

## Coal

Indiana is the nation's second largest coal consumer, and consumption rates have steadily increased for decades. Coal is the number one commodity carried into the state by rail, and given current commodity prices it is likely to maintain its prominence in the state's energy mix in the face of rocketing oil and gas prices. Transport costs are an important component of coal-based electricity rates, and the capacity and cost of rail transportation to and through Indiana will directly influence electricity prices in the state. Currently, the state has relatively low electricity costs, a benefit to the state's industrial sectors and its residents. Coal is also an important input to the state's steel industry, as coal-derived coke is used in blast furnaces to produce steel. Much of this coke is produced in Indiana plants.

If coal remains a major energy source in Indiana, a likely scenario, there will be a greater need to improve the rail network to the state's mines, concentrated primarily in southwestern Indiana. The "last mile problem" is a term describing the disconnect between major rail corridors in Indiana and the state's coal mines, whereby it is often more economical for coal customers, particularly those in the northern part of the state, to import fuel from as far away as Wyoming and West Virginia, rather than from Indiana mines.

According to the Energy Information Administration, over half of the intrastate coal movements in Indiana, by weight, traveled by truck. A May 2007 study published by the Center for Coal Technology Research at Purdue University recommended the development of an "Indiana Coal Corridor"<sup>81</sup> (see Figure 6.1). The proposed corridor does not call for any new infrastructure investment, only the designation of a quasigovernmental body that would negotiate and obtain trackage rights in order to act as a single end-to-end operator, connecting southern coal mines with northern power plants, mainline railroads, and ports. Such an entity would seek to increase the share of Indiana coal used in the state's power plants, and also position the state to increase coal exports through its Great Lakes and Ohio River ports. Constraints in the transportation network are a primary inhibitor of greater coal extraction and exporting in Indiana. According to the Indiana Geologic Survey, based on current consumption levels and existing extraction technology the state has a 500-year supply of coal.<sup>82</sup>

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<sup>81</sup> Thomas F. Brady and Chad M. Pfitzer. *A Prescriptive Analysis of the Indiana Coal Transportation Infrastructure*. Center for Coal Technology Research, Purdue University, May 2007.

<sup>82</sup> "Coal in Indiana." Indiana Geologic Survey, <http://igs.indiana.edu/coal/index.cfm>, accessed August 26, 2008.

## Passenger Rail

### *Intercity Passenger Rail*

Amtrak currently offers daily service between Chicago and Indianapolis, extending to Washington, DC and New York City three days per week. In addition, five routes pass through northern Indiana, three of which connect between Chicago and points in Michigan, and two of which connect to points east, including Cleveland, Pittsburgh, New York, Washington, and Boston.

In the absence of a state-supported rail initiative, the most likely scenario would be a continuation of existing Amtrak services in Indiana (the routes that pass through Indiana between Chicago and Michigan are already supported by the State of Michigan, however). Two proposed multi-state high-speed rail initiatives would have significant impacts on passenger rail services in Indiana: The Midwest Regional Rail System (MWRRS) and the Ohio Hub System. Both would require substantial state support.

The proposed MWRRS came out of the Midwest Regional Rail Initiative, an ongoing effort to improve rail service in the Midwest, sponsored by the transportation agencies from the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin. The proposal includes new or upgraded routes classified into three tiers, corresponding to maximum operating speeds of 110 mph, 90 mph, and 79 mph. Three proposed routes would serve Indiana, all of them originating in Chicago and all in the 110 mph tier. The three routes would connect to: Cincinnati (via Indianapolis), Cleveland (via Fort Wayne or South Bend and Toledo), and Detroit (via Kalamazoo). These three routes are estimated to require a total capital investment of just over \$3 billion, with the Indiana portions costing an average of approximately \$1 million per mile. Figure 6.7 shows potential MWRRS route alignments in Indiana. The proposed routes would likely utilize a combination of short line, regional, and Class I trackage. Both of the alternative Chicago – Cleveland alignments involve primary east-west corridors that are expected to face severe capacity constraints, according to the AAR Study. This may result in higher than expected capital costs, if significant capacity expansion becomes necessary.

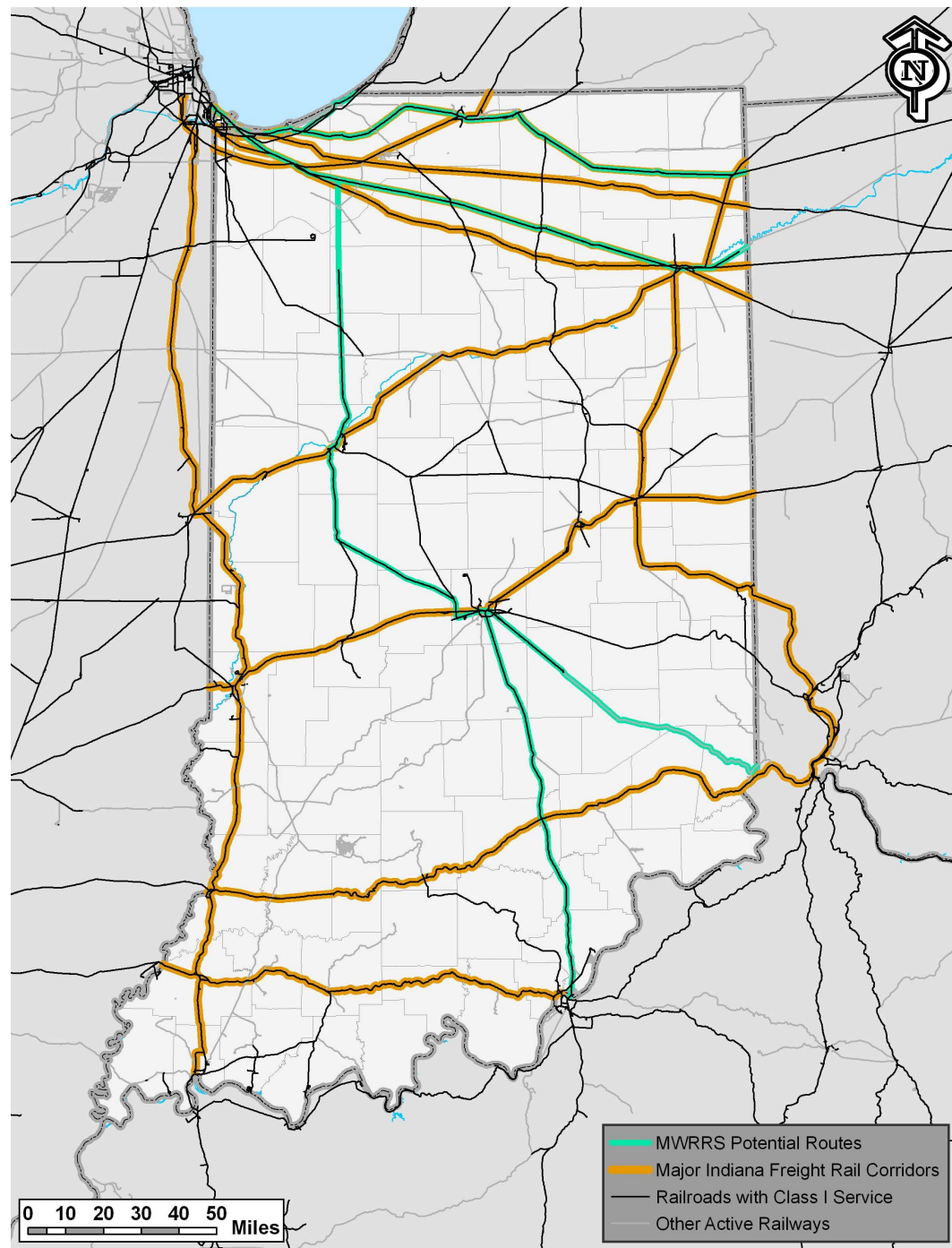
Financing the MWRRS would likely involve federal assistance, probably in the form of matching funds. Due to the nature of the system, multistate cost-sharing agreements would be imperative, and would probably be more complicated than each state simply paying for its share of the infrastructure. For example, the majority of the track-miles on the Chicago-to-Cincinnati route are in Indiana, but the route would likely attract a disproportionate number of Ohio and Illinois residents and require appropriate support from those states. In addition, several pieces of federal legislation currently under consideration would establish a dedicated source of federal matching funds for state-supported rail capital projects. As funding strategies are further developed, each state should consider its potential financial commitment, while maintaining open communication with

the freight railroads, whose cooperation will be crucial to the success of the initiative.

In addition to the routes proposed as part of the MWRRS, INDOT is also studying rail service along the Indianapolis - Louisville corridor, a former Amtrak route. This corridor would complement the existing MWRRS, branching off of the Chicago - Indianapolis - Cincinnati route south of Indianapolis, as shown in Figure 6.7.



**Figure 6.7 Midwest Regional Rail System (MWRRS) Proposed Routes in Indiana**



Source: *National Transportation Atlas Databases (NTAD) 2008*. U.S. DOT, Research and Innovative Technologies Administration's Bureau of Transportation Statistics.

Note: Specific MWRRS route alignments are for illustrative purposes only and are subject to change.

The Ohio Hub is a separate high-speed rail initiative, developed by the state of Ohio, involving four proposed routes radiating from Cleveland. While none of these corridors passes through Indiana directly, the Cleveland – Cincinnati route would connect to the Chicago – Indianapolis – Cincinnati segment of the MWRRS, and the Cleveland – Toledo – Detroit route would connect to the Chicago – Toledo – Cleveland and Chicago – Detroit segments of the MWRRS. Each of these MWRRS routes passes through Indiana, and by interconnecting the Ohio Hub and MWRRS, economies of scale and increased ridership will be generated for both systems. The mutual benefits of the MWRRS and Ohio Hub, particularly to the states of Indiana and Ohio, suggest possible planning and financing synergies and reinforce the need for multistate cooperation in intercity rail planning.

### *Commuter Rail*

There is growing interest in commuter rail in Indiana. Two bills have been introduced in the 2008 session of the Indiana General Assembly related to funding for public transportation investments. House Bill 1220 proposes to require the Commission on State Tax and Financing Policy to study state and local funding alternatives for the NICTD West Lake extension project. One option under consideration involves designating a portion of the sales tax collected in Lake and Porter counties in northwest Indiana to fund the project. Northwest Indiana is also exploring options for funding coordinated regional transit services under the recently established Regional Bus Authority (RBA).

House Bill 1245 proposes to divert a portion of the county option income tax revenue in Indianapolis/Marion County to assist in the development of the Central Indiana Regional Transportation Authority (CIRTA). CIRTA was established in 2005 to implement rapid transit in the nine-county region surrounding Indianapolis. The bill also proposes allowing CIRTA to establish a transit development district to improve transportation infrastructure by capturing a part of the sales taxes collected in the district.

Currently, the South Shore Line between Chicago and South Bend is the only active commuter rail line in Indiana. However, a proposed branch extension of the South Shore Line and several proposed transit projects in and around Indianapolis have the potential to greatly expand the role of commuter rail in regional commuting patterns in Indiana.

The NICTD West Lake Corridor Extension includes two proposed branches of the South Shore Line that would diverge from the existing route in Hammond, Indiana, and proceed southeast to the cities of Lowell and/or Valparaiso. The ongoing study of this proposal has not yet produced cost estimates for any of the four preliminary project alternatives, although it is assumed that any proposal would be contingent upon Federal Transit Administration (FTA) New Starts funding. However, significant local and state resources would be required as well.

Two studies are evaluating potential rail service around Indianapolis. *Directions*, a study initiated by the Indianapolis Metropolitan Planning Organization in 2002, identified seven corridors radiating from Indianapolis that have the potential for some form of fixed guideway transit service. Phase III of the study, currently underway, involves further analysis of the Northeast Corridor, the likely “starter system.” A Locally Preferred Alternative alignment was recommended by MPO staff in April 2008, and next steps would include a Draft Environmental Impact Statement (DEIS) and a FTA New Starts funding application. Costs and funding options have not been indicated at this time.

In a move that may impact the results of the *Directions* study, state legislation passed in 2007 required INDOT to study the feasibility of a commuter rail line linking Bloomington, Indianapolis, and Muncie, with possible stops in Anderson, Noblesville, and Fisher depending on the preferred alignment. The August 2008 final report resulting from that study identified multiple alignment alternatives and recommended several for further analysis. Recommended segments northbound from Indianapolis to Muncie and southbound from Indianapolis to Bloomington could cost between \$600 million and \$700 million. The recommended northbound alignment would serve as an extension of the proposed Northeast Corridor, so future planning exercises should consider the two in tandem.<sup>83</sup>

### *Impact of Passenger Rail Expansion on Freight Rail*

All of the proposed rail projects in Indiana – the MWRRS and the multiple commuter rail proposals – would travel over existing freight lines. Several of these, particularly those across northern Indiana, are already heavily used and approaching capacity. The railroad LOS forecasts in the AAR Study, discussed in Chapter 3, assumed no change in passenger rail traffic, and any increase in passenger trains would have to compete for capacity with freight trains, thus exacerbating the capacity constraints seen in Figure 3.23. One site in particular poses a potential conflict. Currently, a substantial number of freight trains pass through Union Station in Indianapolis. If a large number of new passenger trains were to begin using the station, temporal separation or outright diversion of freight traffic from Union Station may be necessary. The Indianapolis rail network offers an opportunity to relocate at least some freight traffic to the former Indianapolis Union Railway & Belt Railroad (now CSX) around downtown Indianapolis. However, any significant increase of traffic on this route would likely require infrastructure upgrades.

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<sup>83</sup> Final Report: Central Indiana Commuter Rail Feasibility Study. Indiana Department of Transportation, August 2008.

## Major Out of State Rail Issues

### *CREATE Program (Illinois)*

The capacity and efficiency of the Chicago rail network has significant implications for freight transportation in Indiana. Its continued vitality would signal major growth in shipments radiating to and from that region. Conversely, continued degradation of railroad LOS around Chicago would likely result in a diversion of shipments between Indiana and points west to other modes or other routes.

The Chicago Region Environmental and Transportation Efficiency (CREATE) Program is a partnership between the City of Chicago, the State of Illinois, six Class I railroads, Amtrak, and Metra (Chicago's commuter railroad) to improve the current efficiency and future capacity of the rail network in and around the City of Chicago. The program bills itself as a "project of national significance" in light of the fact that nearly one-third of all rail shipments in the United States pass through the project area. In total, 78 projects worth \$1.5 billion are proposed, including 25 road-rail grade separations, 6 rail-rail grade separations, and numerous improvements to viaducts, grade crossings, switches, tracks, and signals. The railroads (including Metra) have committed \$232 million to the project, and the remainder will need to come from federal, state, and local sources. According to the CREATE website, as of 2007 \$130 million in federal and local funds have gone into the project, along with \$100 million in private funding. The future of CREATE will depend heavily on support from the State of Illinois as well as the U.S. DOT, which is beginning the federal transportation reauthorization process in 2009.

### *Ohio Bottleneck and Clearance Issues*

Because the majority of major rail corridors in Indiana are east-west lines, Ohio's rail network is second only to Illinois in its importance as a connection to railroads in Indiana. Several recent studies have identified rail needs in Ohio that are of importance to freight transportation in Indiana.

In September 2007, the Ohio Department of Transportation (ODOT) released the *Ohio Freight Rail Choke Point Study*. That study identified, scored, and ranked 44 choke point locations on the Ohio rail network. Of these, the top three most "severe" all impact the north-south NS line that passes through Cincinnati, which is also one of the two major north-south rail lines passing through Indiana and a crucial link in the Chicago-Cincinnati rail corridor. These three choke points are described in Table 6.2 and shown in Figure 6.8.

**Table 6.2 Ohio Choke Points Affecting the Indiana Rail Network**

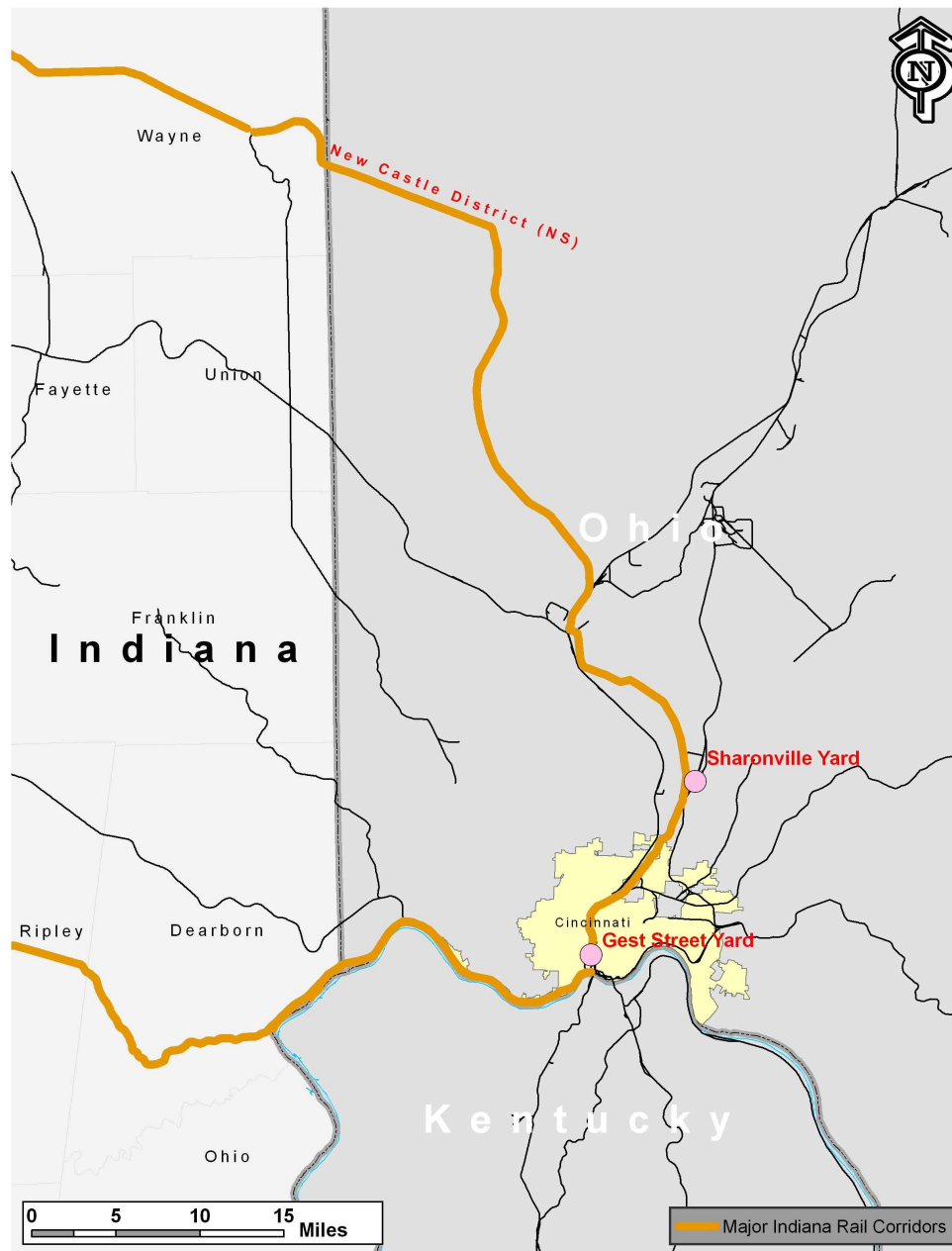
Ohio Statewide Severity Rank	Choke Point Name / Description	Improvements Needed
1	New Castle District (Mainline connecting New Castle, IN with Cincinnati, OH)	Immediate need is new and extended sidings, and siding track improvements. Eventually, connection to Sharonville Yard (Cincinnati), double-tracking.
2	North end of Gest Street Yard, Cincinnati	Addition of new switches and crossovers, and a second main line north of the yard.
3	Sharonville and Gest Street Yards, Cincinnati (switching and intermodal capacity constraints)	Immediate solution is a grade separation project. Eventually, expansion of the existing facility or construction of a new intermodal terminal.

Source: Ohio Freight Rail Choke Point Study, September 2007.

The cost to correct these three choke points alone is estimated at around \$32 million. According to the study, these corrections would also return among the highest value to the state, the railroads, and Ohio shippers, among any choke points in Ohio. Because of their location, relieving these bottlenecks would also benefit shippers and receivers in Indiana.

In addition to rail choke points, double-stack clearance is also an issue on at least one Cincinnati area rail line. The Ohio – Kentucky – Indiana (OKI) Regional Council of Governments' *2030 Regional Transportation Plan* (2008 update) identified double-stack clearance as an issue facing the Cincinnati region. While the most heavily utilized mainlines passing through Cincinnati (the north-south NS line and the east-west CSX line) can accommodate double-stacked container trains, a potentially significant line linking Columbus with Cincinnati cannot. This NS line has six overpasses that do not clear double-stack trains, and two of these overpasses are in the OKI region. According to the OKI plan, NS reports that "an estimated 80,000 to 105,000 truck loads can be diverted annually from the roadways" if this line is improved.

**Figure 6.8 Cincinnati Area Rail Choke Points**



Source: *National Transportation Atlas Databases (NTAD) 2008*. U.S. DOT, Research and Innovative Technologies Administration's Bureau of Transportation Statistics.

## **6.5 AIR**

Indianapolis International Airport, by far the state's busiest cargo airport (and one of the busiest in the United States), is nearing completion of a major renovation that includes entirely new terminal and parking facilities and a new highway interchange. According to airport officials, the airport recently completed a significant cargo capacity expansion, and substantial space remains available for further growth. In addition, a new passenger terminal opened in November 2008, entirely replacing the existing terminal which will be demolished.

One concern identified by several Indiana stakeholders is the Gary Airport expansion. Gary/Chicago International Airport, as it is currently known, has had a somewhat uncertain role in both the regional passenger and freight markets of Northwest Indiana and the Chicago region for a number of years. Currently, the airport lacks scheduled passenger service, and air cargo activity which amounted to only 100 tons in 2006 has fluctuated substantially in recent years, from a low of only 22 tons in 1997 to a high of 358 tons handled in 2000. The airport authority received FAA approval and has begun preliminary work to extend the airport's main runway, allowing it to handle larger aircraft, requiring the relocation of power lines and a large fuel tank, and negotiations to relocate adjacent EJ&E railroad tracks. Through a 1995 compact between the cities of Chicago and Gary, the Chicago/Gary Regional Airport Authority supports capital improvement projects at Gary Airport through the deployment of up to 1.5 percent of passenger facility charges (PFCs) collected at O'Hare and Midway Airports. Planned improvements at the airport and those underway are designed to strengthen Gary's position as a viable regional airport offering regularly scheduled passenger service and increased freight activity. Regional development groups, including the Northwest Indiana Forum, generally favor this plan.

### **Highway Access to Major Airports**

Highway access roads to Indianapolis International Airport and the Terre Haute Hulman Regional Airport were designated as NHS intermodal freight connectors of national significance.<sup>84</sup> Airport Expressway served as the main access point to the Indianapolis International Airport prior to the opening of the new passenger terminal in late 2008. At that time, this roadway was operating at LOS A, at which it was expected to continue to operate into the future. The new primary passenger access point to the Indianapolis International Airport is located off of I-70 on the west side of the airport. U.S. 40 also connects Indianapolis International Airport with I-465/I-74. Numerous segments are expected to degrade to below congestion thresholds by 2030.

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<sup>84</sup>NHS Intermodal Freight Connectors: Report to Congress, U.S. DOT, 2000.

The Terre Haute Hulman Regional Airport can be accessed from I-70 via SR 46 and SR 42. Both of these facilities are expected to continue to operate at LOS A through 2030, though I-70 is expected to degrade to LOS C and D in the vicinity of the airport.

## **Regional Airport Issues**

Several major projects and proposals in the states surrounding Indiana may have an important impact on air freight activities in Indiana.

### *O'Hare Modernization Project*

In terms of total tons of freight handled, O'Hare International Airport was the fifth busiest in the United States in 2006, with over 1.7 million tons emplaned or deplaned there. O'Hare is also one of the most delay-prone airports in the world. The \$6.6 billion O'Hare Modernization Project (OMP), currently underway, seeks to reduce delay and improve reliability at O'Hare by replacing the seven intersecting runways with a more modern alignment involving six parallel runways and two crosswind runways. While the project does not include any cargo-specific landside or airside improvements, it will improve overall airport capacity, and in late 2008 will result in the removal of air traffic caps imposed since 2004. This may lead to increased cargo activity at O'Hare.

Given O'Hare's substantial freight traffic, and the airport's relative proximity to Northwest Indiana (about 1/3 the distance of Indianapolis International Airport), O'Hare plays a significant role in providing air freight capacity to Indiana shippers and manufacturers. One estimate indicates that half of all overseas air freight shipments that originate in Indiana are loaded onto planes and shipped overseas at O'Hare.<sup>85</sup>

### *Proposed South Suburban Airport (SSA)*

The Illinois Department of Transportation (IDOT) is currently moving forward with planning, environmental review, and land acquisition for a new air carrier and cargo airport in the Chicago region. The SSA is to be located in Peotone, 37 miles south of Chicago and approximately 15 miles west of the Indiana border. The airport would be located in Will County between Interstate 57 and IL 1.

According to the SSA Master Plan, air cargo could account for up to 200,000 tons and 5,500 aircraft operations five years after the airport's inauguration, and up to 550,000 tons and nearly 11,000 operations within 20 years. For comparison, Indianapolis International Airport handled just over 1 million tons of air cargo in 2006, making it the 8<sup>th</sup> busiest cargo airport in the United States. Air cargo forecasts for the Chicago region, including the proposed SSA, are based on a

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<sup>85</sup> Indiana export data (value and weight) are from the U.S. Census Bureau and tabulated by WISERTrade, Holyoke Community College.



study area that includes three Indiana counties: Lake, Newton, and Porter.<sup>86</sup> That implies that the proposed airport is expected to serve customers in Indiana, which is logical given the site's proximity to the state line.

### *Elimination of DHL Hub at Wilmington, Ohio*

In an agreement reached in May 2008, DHL will no longer operate a sorting facility and air hub at its privately owned airport in Wilmington, Ohio (former site of the Clinton County Air Force Base). Instead, the company will now contract with UPS to handle air transportation of its parcels while DHL will continue to handle the ground transportation component of its package delivery network. The arrangement will likely result in the majority of the operations currently conducted at the Wilmington facility moving to UPS's facilities at Louisville International Airport. As of 2006, Wilmington was the 13<sup>th</sup> busiest cargo airport in the United States in terms of tons handled, meaning that this arrangement would result in a significant increase in cargo activity at Louisville International Airport, already the nation's second busiest for cargo. The potential relocation of DHL sorting operations to Louisville International Airport also coincides with an agreement between UPS and the Louisville Renaissance Zone Corporation to relocate the UPS ground sorting facility off of the airport grounds in order to accommodate an expansion of the company's air freight sorting facility (Worldport<sup>SM</sup>). This is the location where DHL parcel sorting would take place. While it appears likely that the airport itself has the capacity to accommodate the increased air traffic, increased freight activity at Louisville International Airport may add to the strain on an already congested highway system in metropolitan Louisville, which includes Floyd and Clark Counties in Indiana.

## **6.6 MARINE**

### **Highway and Rail Access to Marine Facilities**

The Port of Indiana – Burns Harbor is well connected to the extensive highway network of Northwest Indiana. As such, the port's needs with regard to highways mirror the needs of the region in terms of continuing to address congestion and reliability issues. Both Buffington Harbor (Gary) and Indiana Harbor (East Chicago) are located in the Chicago region, directly adjacent to the City of Chicago, and access roads and highways suffer from daily urban congestion. Cline Avenue, the main arterial adjacent to the two ports, is expected to operate between LOS B through E south of the ports, and interstate

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<sup>86</sup> *Airport Master Plan for the Proposed South Suburban Airport: Projections of Aeronautical Activity for the Inaugural Airport Program*. May 2004. Page 71.

access routes to the south and east in particular will be primarily at LOS F (Figure 6.9).

**Figure 6.9 Northwest Indiana 2030 Highway LOS**



The two Ports of Indiana on the Ohio River have more limited highway access. The Port of Indiana – Jeffersonville is located across the river from Louisville, and would benefit greatly from completion of the I-265 loop, which currently forms the northwest quadrant of the regional circumferential freeway system. Completion of the northeast quadrant and a bridge over the Ohio River would improve highway access between the port and points in both Indiana and Kentucky, and would also help to relieve existing bottlenecks and congestion. This project is in the region’s long-range plan. The Port of Indiana – Mount Vernon is even more limited, accessible only by state highways 62 and 69. The nearest Interstate highways are I-64 and I-164, both approximately 20 miles from the port. The proposed I-69 extension from Indianapolis to Kentucky and beyond will pass through Evansville, 18 miles east of Mount Vernon. This will improve the port’s connectivity to points throughout Indiana and Kentucky, but connecting between that Interstate and the port itself will still require traveling via SR-62 through downtown Evansville. Congestion between Evansville and Mount Vernon is being addressed by planned access management and other improvements to SR-62, and a proposed western bypass around Evansville (“University Parkway”).

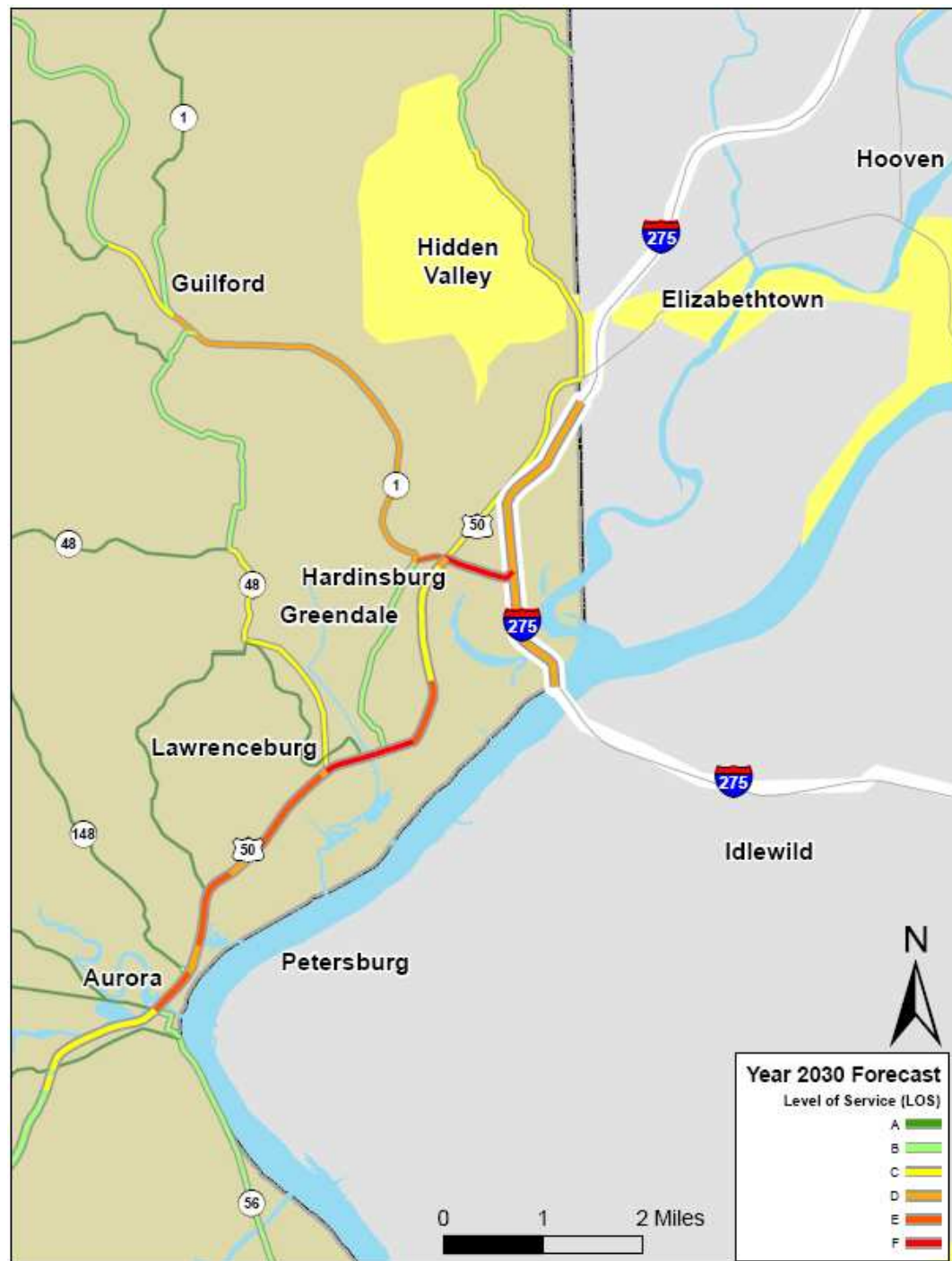
Several port facilities also exist in Evansville, all of them linked by SR 62. Numerous segments of SR 62 are expected to operate at or near LOS F in the future. Fulton Avenue is expected to degrade from LOS C to LOS D and E (Figure 6.10).

**Figure 6.10 Evansville Area 2030 Highway LOS**



Various ports along the Ohio River in the Cincinnati area are accessible to I-275 via U.S. 50. Segments of U.S. 50 in this area are expected to operate at LOS F by 2030 (Figure 6.11). The ramp connecting I-275 with U.S. 50 and Bellevue Avenue is estimated at LOS F currently.

Figure 6.11 Cincinnati Area 2030 Highway LOS

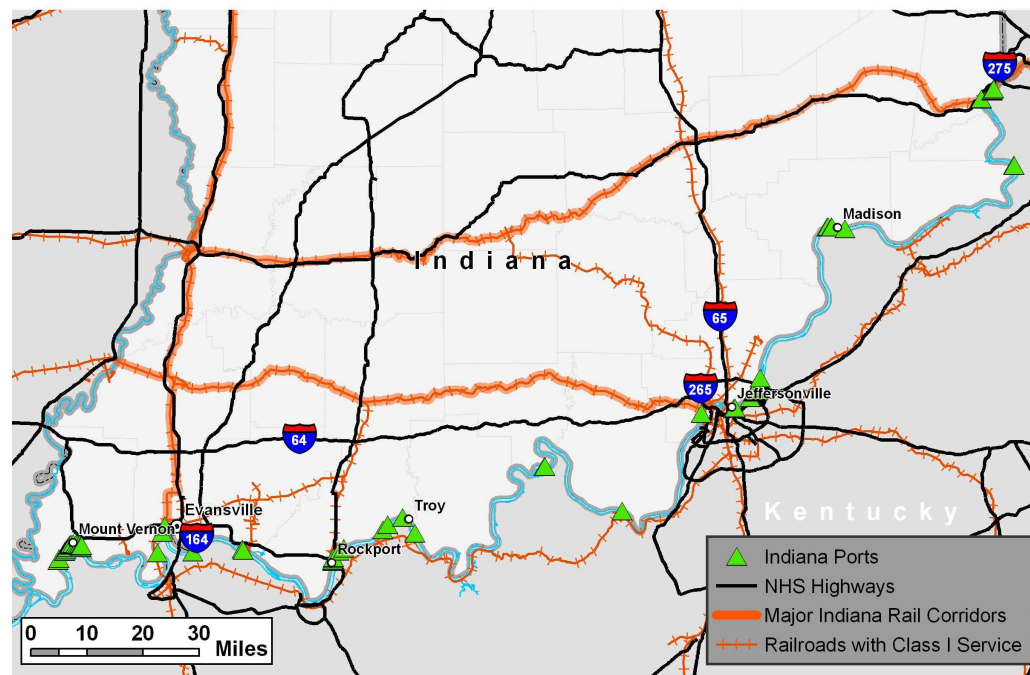


All three of Indiana's publicly owned ports are served by single Class I railroads. CSX serves the two Ohio River ports, and NS serves the Lake Michigan port at Burns Harbor. However, Port officials have indicated a desire for greater diversity of rail options, either through the addition of other Class I operators, or

a greater role for short line railroads, as a way to overcome pricing and service obstacles.

In addition to the state's public ports, there are dozens of individual private and municipal port facilities lining the Ohio River and Lake Michigan in Indiana. Private Great Lakes ports are primarily associated with the region's steel manufacturers, while ports along the Ohio River primarily deal in coal, grain, minerals, metals, petroleum products, and fertilizers. There are clusters of Ohio River ports around the cities of Madison, Jeffersonville, Troy, Rockport, Evansville, and Mount Vernon. Several of these locations have inadequate highway and/or rail access, and relatively long distances are required to reach Ohio River crossings (Figure 6.12).

**Figure 6.12 Highway and Rail Access to Indiana's Ohio River Ports**



Source: *National Transportation Atlas Databases (NTAD) 2008*. U.S. DOT, Research and Innovative Technologies Administration's Bureau of Transportation Statistics.

## Waterway Issues and Opportunities

### *Winter Closures*

Weather-related disruptions to waterborne shipping in northern climates represent a challenge to greater use of that mode. Shippers and receivers that operate year-round must be prepared for periodic and unpredictable periods when the Ohio River and portions of the Great Lakes and St. Lawrence Seaway (GLSLS) are not navigable. The locks and dams of the Ohio River and its tributaries officially remain open year-round, although actual usability depends

on whether the river actually freezes over. The same is true for Great Lakes navigation; however the St. Lawrence Seaway portion between Montreal and Lake Erie officially closes for maintenance from late December through early March, making overseas shipments from Lake Michigan impossible. Similarly, the Soo Locks, which connect Lake Superior with the rest of the Great Lakes, close for approximately two months each winter.

### *Great Lakes and St. Lawrence Seaway Study*

*The Great Lakes St. Lawrence Seaway Study (GLSLS Study)*, completed in fall 2007, was a joint effort involving seven U.S. and Canadian stakeholder agencies. The study found a robust and cost-effective transportation system with considerable room for growth. The system is also highly reliable, with slowdowns and closures occurring less than 2 percent of the time, and more than three-fourths of those resulting from weather or vessel incidents, rather than infrastructure breakdowns.

According to the *GLSLS Study*, average annual freight movement over the GLSLS system amounted to approximately 261 million metric tons between 1995 and 2003, the majority of which did not pass through any locks (intra-segment shipments). At the same time, the study found that the seaway's locks and channels were utilized at only about 50 percent of capacity. The study identified significant potential for increases in container shipping over the GLSLS in two categories:

- Domestic and cross-border shipments within the Great Lakes portion (Lakes Superior, Michigan, Huron, and Erie), which can be accommodated on barges or on container ships up to 1000 feet in length ("Lakers") which are extremely fuel-efficient and last up to 50 years due to freshwater operation.
- Shipments between Great Lakes ports and ports in Montreal, Halifax, and abroad (including shipments to Asia via the Asia-Suez route). These shipments would need to travel on "Seaway Max" or smaller vessels (up to 740 feet in length) that can be accommodated through the Welland Canal connecting Lake Erie with Lake Ontario and the St. Lawrence River.

One specific goods movement corridor identified in the study involves containerized traffic moving eastbound from west coast ports, particularly the northern ports at Tacoma, Seattle, Vancouver, and Prince Rupert. Cargo from these ports could travel by rail to Lake Superior ports at Duluth and Thunder Bay, and then bypass the Chicago rail hub by transferring to barge or ship to connect to U.S. and Canadian points throughout the Great Lakes region. While the competitive advantage would likely be limited to areas with inferior rail service, the study found that GLSLS container services could still capture 3 to 4 percent of total market share by 2050, depending on surface congestion levels.

The greatest inhibitor to container traffic at Great Lake ports in Indiana and neighboring states and provinces is a lack of appropriate infrastructure. Currently, there is almost no container traffic on the Great Lakes portion of the



GLSLS, and significant scale economies would be required to support investment in port facilities and to attract adequate scheduled rail service at these facilities. The *GLSLS Study* found that existing markets could already support limited waterborne intermodal services in the Chicago region via Seaway Max vessels with roll-on, roll-off (Ro-Ro) capability to quickly and efficiently accommodate trailers. No such facilities exist in the region, and development of one would require private sector investment, likely either by or with cooperation of a major railroad.

### *Ohio River Mainstem System Study*

There are currently 20 lock and dam locations along the Ohio River (soon to be 19 when lock and dam locations 52 and 53 are replaced by the Olmsted lock and dam) between Pittsburgh and the river's confluence with the Mississippi River, including five lock and dam locations along Indiana's southern border. None of the Indiana facilities were constructed or rehabilitated more recently than 1975. Construction is currently underway at the McAlpine Lock and Dam at Louisville, KY/Clarksville, IN, to replace the 600-foot auxiliary lock with a second, full-size 1200-foot lock. The project is currently scheduled for completion in early 2009.

Maintenance of locks and dams on the Ohio River, as with the rest of the Inland Waterway System, is the responsibility of the U.S. Army Corps of Engineers, and is federally funded. The May 2006 *Ohio River Mainstem System Study*, published by the Corps, identified lock reliability as a serious and potentially costly issue along the Ohio River. According to that study, significant lock closures along the Ohio River resulted in accumulated increased transportation costs of nearly \$20 million between 2002 and 2005, with lost productivity costs potentially higher than that. The primary cause of these extended closures is aging infrastructure: as of the report's publication date, 15 percent of locks were greater than 50 years old, and 95 percent were at least 25 years old. One fourth have already exceeded their design lives, and by 2016 this share will increase to half. Most of the lock and dam systems on the Ohio River have one 1200-foot main lock and one 600-foot auxiliary lock, the latter of which is too small to move an entire 15-barge tow in a single cut. Thus, even scheduled lock closures result in significant delays. As the study notes, most closures are indeed scheduled in advance, although some emergency closures have occurred in recent years. This is of growing concern as a greater number of locks reach the end of their design lives. Achieving significant improvements in reliability and lock delay times would require replacement of auxiliary locks with full-size locks. This is likely to occur through the incremental modernization process, although it will cost billions of dollars and probably take decades to complete. Locks and dams along Indiana's stretch of the Ohio River are listed in Table 6.3. However, since most waterborne freight to and from Indiana on the Ohio River is not traveling intrastate, the state has an interest in the condition and performance of all Ohio River locks, most especially those downstream in Illinois.

**Table 6.3 Locks and Dams on the Ohio River through Indiana**

Lock & Dam Name	Nearest Indiana City	Year Operational		
		Main	Auxiliary	Dam
Markland	Florence	1959	1959	1964
McAlpine	Clarksville	1961	1921	1964
Cannelton	Cannelton	1971	1971	1971
Newburgh	Newburgh	1975	1975	1975
J.T. Myers	Mt. Vernon	1975	1975	1975

Source: *Ohio River Mainstem System Study Integrated Main Report*. U.S. Army Corps of Engineers, May 2007.

Note: All of the locks listed in this table consist of a 1200'x110' main chamber and a 600'x110' auxiliary chamber. However, construction is underway to replace the auxiliary chamber at McAlpine with a 1200'x110' chamber, and construction has been authorized to extend the auxiliary chamber at J.T. Myers to 1200'.

### Industry-Specific Marine Gaps and Needs

Indiana's maritime ports, both on Lake Michigan and on the Ohio River, handle primarily bulk goods such as coal, stone, iron ore, steel products, grain, chemicals, and fertilizers. On the Great Lakes side, the most significant port activities relate to the region's substantial steel industry, demonstrated by a variety of steel-related service industries on the site of the Port of Indiana – Burns Harbor, and several privately operated port facilities owned by the region's steel manufacturers. On the Ohio River side, coal is a significant commodity, both exported from mines and received by power plants. Currently, a substantial portion of the coal entering Indiana from West Virginia arrives by Ohio River barge, and while nearly all of the coal arriving from Wyoming travels by rail, transshipment to barge at the Missouri River is a viable alternative for reaching southern Indiana power plants, only minimally used today. Other substantial commodities traveling to or from Indiana via the Ohio River are grain, steel products, and fertilizers.

The overall needs of the state's two navigable waterway systems are described in the previous two sections. Industry-specific needs generally mirror the overall condition and future needs of those systems, focusing on reliability, access, and efficient infrastructure. Overall, waterborne transportation is the most cost-effective means for transporting low-value bulk goods over long distances, and is often a less expensive substitute for intermodal connection to rail or truck for these types of shipments. As such, an efficient and reliable waterway system reduces the cost of doing business within the state and improves Indiana's competitive advantage for exporting bulk goods, particularly to overseas locations.

One area with much at stake with respect to marine transport is the agricultural sector. Indiana's agricultural exports are the 10th highest in the nation. The state



is the 5th ranking exporter of feed grains (including corn) and is 4th in soybean exports. Indiana also is a top 10 exporter of poultry products, seeds, and live animals/meat. Freight access to the country's international gateways on the East, West, and Gulf coasts are crucial to the competitiveness of the state's agricultural exports. Increased global trade means that Indiana is facing stiffer competition from producers around the world; therefore, access to an efficient and reliable Inland Waterway system is increasingly important to maintaining Indiana's competitive positioning.

## **6.7 PIPELINE**

Pipelines in Indiana are regulated by the Indiana Utility Regulatory Commission, a state agency that operates separately from INDOT. The Pipeline Safety Division of IURC is jointly funded by the state and the U.S. DOT, and acts to enforce federal pipeline safety regulations.

According to the Energy Information Administration (a division of the U.S. Department of Energy), interstate natural gas pipelines into and out of Indiana operate well below capacity. Over the past ten years, neither inbound nor outbound average daily natural gas flows have exceeded 55 percent of respective capacities in any year, and capacities in both directions have increased by at least 30 percent since 1990. Demand for natural gas will remain high in the state, as it is by far the most popular energy source for home heating, and is a significant supplier to the state's industrial sector.<sup>87</sup> A significant quantity of natural gas also passes through the state, primarily entering from the south and west and departing to the north and east. Indiana's other top commodities moved by pipeline are crude oil and refined fuel products. Indiana is home to the largest oil refinery outside of the gulf region, in Whiting, and this is the only such major facility in the state.

One additional potential source for future growth in pipeline demand comes from the developing ethanol and biofuel industries. As of 2008, there are at least 11 ethanol or biodiesel plants operating in Indiana, with up to twelve more expected to begin operations by 2010.

Because pipelines are owned and operated in the private sector, little is known about the long-term plans for pipeline expansion in Indiana, with the notable exception of the Rockies Express Pipeline – East Project (REX – East), a 42-inch diameter pipeline linking the Rocky Mountains region with points in the midwestern and eastern United States. The REX – East project is expected to enter service in mid-2009.

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<sup>87</sup> *Indiana State Energy Profile*. Energy Information Administration, U.S. Department of Energy, [http://tonto.eia.doe.gov/state/state\\_energy\\_profiles.cfm?sid=IN](http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=IN) accessed August 27, 2008.

## Opportunities

Because interstate pipelines require long, contiguous corridors, similar to highway and rail corridors, there is an opportunity for mutually beneficial cooperation between INDOT, the IURC, and pipeline operators. In particular, opportunities for synergy with pipeline development exist with two INDOT-related activities: (1) railroad abandonment, and (2) new highway construction.

“Utility needs” are recognized by the State of Indiana, and specifically INDOT, as one of several potential reuses for abandoned rail lines. The 2003 *Indiana Rail Corridor Preservation Study* found that “The process to preserve rail corridors in Indiana is cumbersome and inflexible, which precludes INDOT from taking the necessary steps to acquire rail corridors under the Federal acquisition procedures.” The study also attributed challenges in rail corridor preservation to a “duplicative, time-consuming, and likely unnecessary” review and public input process conducted by the Transportation Corridor Planning Board (TCPB), an independent board created by the Indiana legislature to consider rail corridor preservation. Implementing the recommendations of that study, which would simplify the acquisition process, give INDOT increased discretion, and relegate the TCPB to an advisory role, would likely improve the agency’s ability to acquire abandoned rail lines that might then be made available for pipeline or other utility development.

Co-locating utilities with new highway construction is part of a growing movement toward multi-use corridors that may include highways, rail lines, pipelines, and communications technology. Indiana is studying, planning, or building several major new highway facilities, including I-69 between Indianapolis and Evansville, and the Illiana Expressway between Interstates 65 and 57 in Northwest Indiana and Northeast Illinois. Both of these corridors could be potentially appealing pipeline corridors, and the sale of pipeline easements to private operators may provide a source of revenue to help offset the cost of constructing those highways. INDOT does not oversee pipeline development in Indiana, and currently no formal mechanism exists to inform or seek out pipeline operators that may be interested in co-locating along new or expanded highway corridors. Implementing such strategies would require forming the necessary partnerships, starting with the IURC and trade groups such as the American Gas Association, American Petroleum Institute, and the Association of Oil Pipe Lines.

## 6.8 POLICY GAPS, NEEDS, AND RECOMMENDATIONS

The descriptions of the organizational and resource issues above, as well as specific mandates, paint a picture of public sector involvement in freight planning in the State of Indiana. The ongoing stakeholder outreach through this study, as well as comparison to state-of-the-practice planning efforts elsewhere, help to identify where within the current policy framework gaps and needs exist, and what strategies could be implemented to bridge those gaps.

## Seven Key Elements of Successful Freight Planning

According to NCHRP Report 594: *Guidebook for Integrating Freight into Transportation Planning and Project Selection Processes*, successful freight planning is defined by seven key elements. The study used 23 freight case studies, which were dissected to derive optimal freight policies, practices, and processes. The approach in identifying the 7 key planning elements was to focus on: 1) integrating freight issues into established planning and programming processes; 2) building on and supporting the existing body of freight planning guidance; 3) providing flexibility; 4) effectively using best practices; and 5) providing guidelines that can evolve and grow as freight considerations are mainstreamed. The seven key principles identified for successful freight planning are:

1. Establishment of a freight technical lead;
2. Understanding the statewide freight system;
3. Linking freight planning and the transportation planning and programming process;
4. Understanding freight data needs;
5. Conducting effective outreach to stakeholders;
6. Participating in freight training and education; and
7. Advocating for freight planning.

Indiana's policy gaps and needs as related to each of these areas, as well as recommendations, are discussed below. Many of these policy gaps, needs, and recommendations address issues and policy areas discussed in Chapter 5.

### *Freight Technical Lead*

Indiana is advanced in its treatment of freight in the planning process relative to other states. It has established a dedicated freight office, the Office of Freight Mobility, and has undertaken several freight transportation studies. The freight technical lead heads up coordination of freight planning among various DOT offices and with external organizations, including MPOs and economic development agencies.

#### **Recommendation:**

1. Given that just one person is dedicated full time to freight, it will be critical to continue to draw on the resources of planners in the long-range planning department and other divisions as needed. Potentially, additional dedicated freight staff will be required, particularly given the need to coordinate with MPOs and economic development agencies throughout the State.

### *Freight System Understanding*

Indiana has a good understanding of its statewide freight system. The State has undertaken studies of freight commodity flows to create a model for estimating

the production and attraction of freight flows in Indiana for 2015 and 2025. The Rail Office maintains a rail map, which is updated annually and documents any changes in active rail lines or ownership. Indiana maintains a comprehensive map of bridges that are posted with reduced weight limits.

**Recommendations:**

1. The State should consider designating truck routes throughout the State. Evaluation of potential truck route designation should consider implications for truck travel patterns, congestion, safety, and asset management.
2. Whether or not new truck route designations are made, development of central comprehensive information for carriers on roadways where heavy trucks are permitted and the location of truck parking facilities would be beneficial for trucking companies.

*Freight Planning Link to Transportation Planning and Programming*

With the dedicated freight office and a director to oversee integration of transportation planning, the organizational structure exists for freight to continue to receive focus as part of long-range planning and programming activities. The Major Moves plan explicitly considered economic development as a major factor for future transportation projects, which incorporates freight needs in many respects.

The level of freight planning varies significantly among MPOs. While in many MPOs, especially small organizations, designation of a planner dedicated exclusively to freight may not be possible, it is important to ensure that freight is considered within the MPO. At a minimum, one staff person should serve as a point person for freight issues, even if only working on freight part time. A dedicated freight focus is necessary to ensure that project development and prioritization considers freight. When MPOs recommend projects for the STIP, if they have not been evaluating projects for freight benefits or systematically considering freight improvements, they will recommend few freight projects, as is currently the case with many Indiana MPOs.

**Recommendations:**

1. Work to boost understanding and consideration of freight by MPOs. For example, the State can work with MPOs to ensure that regional performance measures incorporate freight so that freight impacts can be evaluated during project prioritization. Additionally, Indiana MPOs should be encouraged to include freight elements to the project prioritization process so that a larger number of projects beneficial to freight will be considered in the planning process.
2. Encourage formation of the proposed MPO Council Freight Committee. Support the Freight Committee in sharing best practices by other MPOs on how to incorporate freight into project identification and prioritization processes.

3. Develop mechanisms for ongoing communications with private shippers and carriers. Educate shippers and carriers on the planning process and solicit information on freight needs and deficiencies. Reach out to shippers and carriers to promote attendance at public meetings on project programming. The existence of a freight designated point of contact with a background in the trucking industry is a great strength on which to capitalize.
4. Work with the INDOT long-range planning office to improve processes for monitoring of industry and major land use developments throughout the State that affect freight, such as development at interchanges and major corporate start-ups and relocations. INDOT also can provide support to MPOs to ensure that they are considering freight adequately in their land use planning.
5. INDOT should develop methods for calculating public benefits for freight investment, such as employment creation, increased property tax revenue, increases in property values, increases in average wage rates, and regional economic benefits. INDOT should identify the benefits that are most important to each stakeholder group and ensure that information about those benefits is communicated to that audience, including elected officials, the public, and business leadership.

### *Indiana Freight Data*

The Indiana University Transportation Research Center has developed a Commodity Flow Model Survey for INDOT that assigns freight movements to statewide highway facilities. This data source is used in the statewide travel demand model to estimate truck trips. Additionally, Indiana has access to nationally available surface transportation freight data provided by U.S. DOT, such as Freight Analysis Framework data and rail waybill sample data, and participates in other national data reporting systems, such as the Highway Performance Monitoring System (HPMS).

In addition to the above freight data sources, the INDOT Office of Systems Analysis and Planning also oversees several asset management systems, including:

- Pavement Management System;
- Bridge Management System;
- Congestion Management System;
- Safety Management Systems; and
- Intermodal Management System.

### **Recommendations:**

1. The Office of Freight Mobility should work with other divisions to ensure that system analysis processes regularly identify freight impacts of system deficiencies. A system should be in place to alert the Office of Freight

Mobility when an operations deficiency affecting freight movement is identified, such as when a bridge is posted for a reduced weight limit requiring trucks to take alternate routes.

2. INDOT should continue to regularly update its commodity flow model. This data potentially can be used for other types of analysis such as county-level freight flows.
3. INDOT should continually evaluate freight data needs by MPOs and regional planning agencies, which INDOT may be able to support through centralized data management.
4. INDOT district offices should solicit input on regional conditions related to freight. For example, MPOs work with district offices on making freight improvements such as improving turning radii for trucks and have local knowledge of freight issues that can be useful for statewide planning.

### *Freight Stakeholder Outreach*

INDOT regularly participates in freight forums such as the annual Logistics Council meeting and meetings of Purdue's Regional University Transportation Center, which includes shippers and carriers. INDOT can boost awareness by the freight community of ways to participate in the planning process and encourage private sector input by fostering contact between the private sector and the Office of Freight Mobility. INDOT should continue to increase its leadership role in developing relationships with shippers and carriers and provide support to MPOs that do not have the resources to do so directly.

A number of MPO stakeholders expressed interest in INDOT's working relationship with its district offices and, in turn, with cities and MPOs. Since the MPOs work primarily with the district offices, it is important that the districts and the central office have adequate communication on freight issues. In particular, smaller MPOs with limited staff hoped to see increased leverage in INDOT district offices, resulting in more attention to local and regional freight issues. There is a desire among these MPOs for increased planning guidance and cooperation with INDOT. Several MPO stakeholders also indicated that more consistency between INDOT district boundaries and local and regional jurisdictional boundaries would improve regional planning efforts within the state. For example, the Indianapolis metropolitan area currently falls within three different INDOT districts.

### **Recommendations:**

1. INDOT should expand outreach to shippers and carriers, particularly as part of the ongoing planning process. During INDOT's long-range plan update cycle, freight-specific "listening sessions" should be conducted across the State to educate freight stakeholders on the transportation planning process and gather input on specific needs of freight users. Whenever possible, examples of new projects and changes to the process resulting from freight stakeholder input should be showcased. Because the freight community

includes private sector companies, to maintain participation it will be critical to demonstrate that their participation results in transportation system improvements of value to them.

2. Additional outreach to shippers and carriers should be conducted via attendance at industry events and relationship development with specific corporations in the region. Because freight planning benefits from significant private-sector involvement, innovative and proactive outreach may be required given the business commitments of stakeholders. INDOT freight representatives should consider conducting meetings at locations convenient to shippers and carriers, potentially at their offices.
3. INDOT should consider development of freight communications vehicles, such as a freight listserv that would send out alerts to carriers and dispatchers with real-time information on crashes, weather conditions, closures, or other information affecting truck movement on state roadways. This service could recommend alternate routes when an incident blocks a major roadway and help manage congestion when incidents occur. For example, Washington State's Freight Office manages a listserv reporting such issues and including photos of incident locations.
4. INDOT should support regional economic development agencies in their promotion of freight assets to developers, providing data on transportation infrastructure, connectivity, and state commitment (e.g., Major Moves) to demonstrate that potential investors can count on a well-maintained system and state responsiveness to transportation user needs. In addition, INDOT may help foster connections between developers and freight providers, identifying key opportunity areas for mutually beneficial relationships; continue to improve data and communications demonstrating transportation benefits offered by Indiana as distinguished from other locations; highlight the transportation benefits that make Indiana attractive for business location, including proximity to large markets such as Chicago and well maintained infrastructure; and promote the 2007 phasing out of the state tax on inventory, which was a barrier to freight business location, particularly intermodal facilities.
5. The INDOT web site should be evaluated for enhancements to freight information. Potentially, public information for all modes including rail and marine could be grouped on the freight page (<http://freightmobility.in.gov>) with links to other divisions. Information needs should be solicited from carriers to enhance the web site to respond to their needs.
6. INDOT should support MPOs and other regional agencies in coordinating potential freight developments between jurisdictions, promoting the state and regional benefits of the facilities, and avoiding jurisdictional conflicts that could delay or prevent intermodal development activity.
7. INDOT should encourage formation of the proposed MPO Council Freight Committee and support the Committee in sharing best practices by other

MPOs on how to incorporate freight into project identification and prioritization processes.

### *Training and Education*

Additional training and education on freight planning is needed for MPOs and can be coordinated once a new MPO Council Freight Committee is established or through other means. Additionally, INDOT should monitor and support the educational offerings in transportation and logistics to ensure that industry needs are being met.

A number of shipper and carrier stakeholders, including the Indiana Motor Truck Association, cite a chronic shortage of qualified commercial drivers as a persistent and serious problem in Indiana. Indeed, this has been a longstanding national problem. The American Trucking Association estimates that “there is still a need to recruit qualified drivers to fill an expected shortfall of 111,000 drivers by 2014.”<sup>88</sup> At present the problem is tempered somewhat by the recent economic downturn and resultant decline in the demand for trucking services. However, in the long term, INDOT or other State agencies should consider taking an active role in ensuring a vital workforce in the future, as trucking is a major industry in Indiana and a crucial component of many of the State’s other key industry sectors. Trucking accounts for 2.4% of all employment in Indiana, far greater than that sector’s 1.5% share of employment nationwide. The Indiana Motor Truck Association already partners with Ivy Tech Community College, a public institution, on a driver training and recruitment program. Numerous shipper and carrier stakeholders have lauded Ivy Tech’s continued role in workforce development in Indiana.

### **Recommendations:**

1. INDOT should promote to MPOs and other planning agencies participation in existing, free training programs such as the U.S. DOT’s free monthly webinar “Talking Freight.” Additionally, FHWA offers a Freight Professional Development program to assist DOTs and MPOs in developing skills and knowledge in freight planning and operations.
2. Additionally, INDOT should develop and lead similar programs such as courses on state-specific freight information, including information on state freight data available for MPOs and best practices in MPO freight planning.
3. INDOT should monitor logistics industry workforce needs and whether sufficient education and training exists to meet these needs. Too often educational institutions develop programs based on their perception of industry needs without sufficient involvement of employers who would hire graduates of these programs. This should include working with higher education

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<sup>88</sup> <http://www.truckline.com/AdvIssues/DriverShortage/Pages/default.aspx>



institutions and employers to ensure that education programs respond to actual industry needs and not perceived needs.

### *Advocacy*

The importance of freight to national commerce and to economic competitiveness has recently received increased attention from national agencies and organizations, including the Surface Transportation Policy and Revenue Study Commission and the U.S. Chamber of Commerce. INDOT should continue its work to ensure that agencies and organizations throughout the State realize the opportunities that freight movement provides to Indiana and its role in national economic competitiveness. Additionally, to gain support of freight initiatives by the public, INDOT should work to improve understanding of the benefits of freight.

#### **Recommendations:**

1. INDOT does have a description of “Benefits of the Railroad Industry” on the railroad section of the web site but could expand this information to promote the benefits of all freight modes more broadly on the freight section of the web site. This also could be achieved by partnering with economic development agencies to develop content for their web sites and linking to them.
2. To increase public support of freight projects, INDOT should develop methods for calculating public benefits for freight investment, such as job creation, property tax revenue increases, increases in property values, increases in average wage rates, and regional economic benefits. INDOT should identify the benefits that are most important to each stakeholder group and ensure that information about those benefits is communicated to the appropriate audiences, including elected officials, the public, and business leadership.
3. As Federal and state transportation officials conduct legislative outreach to learn more about freight and its impact, INDOT should take advantage of opportunities to share its views on the importance of freight to Indiana’s economy.

### **Other Critical Policy Areas**

#### *Safety*

Every time an incident occurs involving a heavy truck or train resulting in fatalities or injuries or causing a major traffic backup, public support for increased freight movement erodes. It is critical that the freight users of the transportation system do so in a safe and law-abiding manner to ensure that Indiana’s residents are safe, and that highway assets are well managed.

Through development of its Strategic Highway Safety Plan (SHSP) process, Indiana has identified a need for statewide identification of problem motor carriers or commercial drivers, such as those with chronic permit, overweight, safety,

and traffic violations. According to the SHSP, the Indiana State Court Administration is developing a statewide case management system to comply with Federal mandates requiring Commercial Driver License (CDL) conviction processing from Indiana courts to the bureau of motor vehicles within 10 days.

According to the SHSP, currently the statewide court system has little knowledge of the increasingly technical and highly regulated transportation industry. Often commercial motor vehicle (CMV) drivers participate in court-sponsored diversion and deferral programs despite Federal and state prohibitions for CMV drivers. The SHSP states that state agencies will work with the Indiana legislative branch to strengthen laws on adjudication of CMV moving violations. Additionally, the SHSP identifies a need for increased awareness by automobile drivers of sharing the road safely with large trucks and for greater use of safety belts among commercial vehicle drivers. The plan also recommends continuation of Operation Lifesaver and that 80 highway-rail grade crossings be improved per year via the Highway-Rail Hazard Elimination Program. Currently 30 to 35 are improved per year by INDOT.

One stakeholder observed that a recent dramatic escalation in the cost of litigation and damages resulting from accidents involving commercial vehicles have increased the cost of doing business in general (not just in Indiana). While this appears to be a national trend, it suggests that there are significant secondary economic benefits to programs that improve highway safety or reduce dangerous roadway conditions.

At least one trucking stakeholder with a container shipping operation expressed concern about the lack of regulatory oversight of the condition of containers and chassis. Over the course of a journey, containers and chassis are passed from one carrier to another multiple times. When mechanical defects or other safety issues are present, in most states the motor carrier currently transporting the equipment is liable for violations. As a result, equipment owners have less incentive to maintain their equipment in a state of good repair, and currently there is no standard regulatory framework for ensuring that this occurs. The trucking industry favors legislation that would shift the burden of responsibility from motor carriers to equipment owners, and establish a regular inspection and repair program. The Federal Motor Carrier Safety Administration (FMCSA) produced model legislation to this effect in 2006, and is currently in the process of developing a nationwide chassis registry. Enacting and enforcing laws governing maintenance and liability would still be the responsibility of the states.

### **Recommendations:**

1. While INDOT is not identified in the SHSP as a lead agency in implementing some of these enforcement, education, and data management programs, INDOT's Office of Freight Mobility should monitor progress on safety initiatives identified in the SHSP related to freight.

2. INDOT should monitor the trend of heavy truck traffic avoiding rising toll costs on the Indiana Toll Road by using alternate routes, and whether vehicle mix issues are becoming a problem in truck-related crashes in Northern Indiana counties.
3. INDOT should examine legislation for maintenance and liability issues related to trucking, particularly related to equipment.

### *Truck Routes*

As discussed in Chapter 5, some carriers prefer not having the limitation of designated truck routes. However, designation of truck routes could be helpful in terms of asset management because limiting heavy vehicles to fewer roadways would minimize heavy truck damage to lower classification roadways. Nevertheless, the resulting increases in volumes of heavy vehicles on designated routes could speed roadway deterioration and affect maintenance cycles on state routes.

#### **Recommendations:**

1. The impacts of truck route designations should be studied in further detail. Any truck route system could be designated through a data-driven scoring process, which could also be used to allocate funds.

### *Truck Size and Weight*

No resource exists for the statewide identification of problem motor carriers or commercial drivers, such as those with chronic permit, overweight, safety, and traffic violations. While current Indiana statutes provide for penalizing chronic overweight carriers, obtaining information is difficult and there is no process in place to enforce the statute.<sup>89</sup> At this time, commercial vehicle enforcement is the responsibility of the Indiana State Police, not INDOT.

#### **Recommendations:**

1. Work with the Indiana State Police to implement a database for sharing information regarding problem motor carriers.
2. Work with the Indiana State Police, the Department of Revenue, and the state legislature to improve truck size and weight enforcement and create a formalized process for enforcing existing statutes. Such a process could involve an interagency enforcement body that establishes penalties, fosters data sharing between INDOT and the other relevant state agencies, and imposes fines commensurate with the cost of repairing damages caused by overweight vehicles.

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<sup>89</sup>Indiana Strategic Highway Safety Plan, 2006.

3. In conjunction with truck route designations, study modifying restrictions to allow increased truck sizes and weights along routes of regional significance to the freight or manufacturing industries.

### *Truck Parking*

As mentioned in Chapter 5, a shortage of truck parking areas along many major highway corridors is among the major issues facing the trucking industry, and the trucking industry has specifically identified this as a problem in Indiana. The lack of availability of both public and private parking is compounded by hours-of-service regulations and enforcement. The result is that often when drivers need to stop to rest they cannot find designated parking for their vehicle and are forced to park in locations such as highway ramps, along residential streets, or in commercial parking lots. Parking in these types of locations can present safety problems and result in objections by communities.

Public truck parking facilities do exist along the Indiana Toll Road in locations formerly occupied by service plazas; however, these facilities do not include electrical hook-ups for trucks.

#### **Recommendations:**

1. Review results of the Midwest truck parking study underway and consider measures to address deficiencies, which may include not only providing more parking in targeted locations but also providing specific amenities needed by truckers.
2. Optimize existing rest areas by considering intelligent transportation systems such as dynamic message signs on interstates informing truckers of truck parking availability in real time.
3. Evaluate the potential of private companies developing and/or operating private truck parking areas.

### *Funding*

Because significant amounts of freight pass through Indiana, the State seeks to ensure that transportation capacity is sufficient, mitigate impacts, and capitalize on freight economic development opportunities. To improve and develop additional freight facilities additional funding sources are needed.

#### **Recommendations:**

1. INDOT should communicate support of dedicated freight and metropolitan congestion relief programs as recommended in the National Surface Transportation Policy and Revenue Study Commission report. This proposed realignment of current Federal transportation programs has the potential to provide additional funding benefiting freight movement and congestion relief in metropolitan areas.

2. Aggressively pursue Federal funding programs that can be used to support freight investments.
3. Participate in a state legislative “Freight Day,” potentially organized by a freight advocacy organization to highlight infrastructure investment opportunities and benefits; participate in legislative freight days with other organizations such as the Indiana Trucking Association. Outreach to state and Federal elected officials in the form of a legislative “Freight Day” can communicate the importance of freight to the region and help the State seek Federal support of freight policies and projects.
4. Evaluate incentive and funding programs for freight in other states and consider developing new or modifying existing freight programs in Indiana. Indiana should consider legislation to provide state tax relief for private freight transportation infrastructure such as intermodal facilities, rail infrastructure, waterway docks, distribution park roadways, and air freight handling facilities.
5. Continue to pursue public/private partnerships.

### *Multimodal and Intermodal Considerations*

Comprehensive freight planning must consider all transportation modes including rail, water, and air, as well as highways. In most cases transportation efficiency via other modes is affected by integration with the roadway network, given that the “last mile” of the trip is usually via truck. Rail and water modes can take pressure off the highway system and present efficient and environmentally friendly alternatives to truck transport.

### **Recommendation:**

1. Given INDOT’s current emphasis on roadway infrastructure, Indiana may wish to pursue state legislation to expand INDOT’s oversight, management, and support of other modes. Stronger organizational support can strengthen planning and project development efforts for other modes, resulting in a stronger transportation system overall. Efforts by other state DOTs to more fully integrate multiple transportation modes include development of an office of intermodal planning overseeing all modes other than highway (Mississippi), housing commercial vehicle enforcement within the DOT (Mississippi and Minnesota), and establishing a rail development commission (ORDC) as an independent commission within the DOT (Ohio).
2. Recently evaluated projects and corridors can be reevaluated with a broader look at multimodal and intermodal opportunities. The Indiana Commerce Connector, for example, was studied with the intention of enhancing mobility, providing congestion relief, enhancing safety, and being a catalyst for economic development. This project also has potential to integrate with other long-range transportation projects, such as the I-70 dedicated truck lanes and the I-69 corridor, and could provide potential connectivity to a new

rail intermodal facility in central Indiana. Further, the corridor could be utilized for mass transportation.

## **6.9 SUMMARY OF NEEDS**

Table 6.4 summarizes the infrastructure, industry, and policy gaps and needs identified above that specifically relate to freight movement. The needs are organized by mode, though many gaps and needs are interrelated. For example, the shifting of intrastate coal shipments from southwest Indiana to northern Indiana to rail through short-line improvements and the creation of a “coal corridor” will help to reduce congestion (and therefore congestion-related improvement needs) on the State’s north-south highways.

Table 6.4 Summary of Primary Mode-Specific Freight-Related Gaps and Needs

Type of Need	Highway	Rail	Air	Marine	Pipeline
Infrastructure	<ul style="list-style-type: none"><li>• I-65 – Statewide capacity improvement or mode shift</li><li>• Northwest IN:<ul style="list-style-type: none"><li>– U.S. 41 capacity improvement</li><li>– Indiana Toll Road capacity improvement</li><li>– Borman limited capacity improvements, e.g., ITS, geometrics</li></ul></li><li>• Indianapolis highway capacity and interchange geometry improvements:<ul style="list-style-type: none"><li>– I-465</li><li>– I-65</li><li>– I-69</li><li>– I-70</li><li>– I-74</li><li>– U.S. 31</li><li>– U.S. 36</li></ul></li><li>• I-69 from Indianapolis to Evansville</li><li>• Illiana Expressway</li></ul>	<ul style="list-style-type: none"><li>• Capacity improvements to Indiana’s primary Class 1 lines</li><li>• 286,000 lb capacity on Indiana’s short lines/regional rail</li><li>• Avon highway access: U.S. 36 capacity improvements</li><li>• Intermodal container facility in Indiana in conjunction with increased and more direct west coast service</li></ul>	<ul style="list-style-type: none"><li>• General improvements to Gary Airport to support more cargo capacity, such as runway expansion</li><li>• U.S. 40 to Indianapolis Airport</li></ul>	<ul style="list-style-type: none"><li>• Update/reconstruct Ohio River locks</li><li>• Cline Avenue; Buffington Harbor and Indiana Harbor access</li><li>• Port of Indiana – Jeffersonville access; I-265 loop</li><li>• Port of Indiana – Mt. Vernon, other Evansville port access; SR-62 improvements; potential new river crossing</li><li>• U.S. 50 @ I-275</li></ul>	
Policy	<ul style="list-style-type: none"><li>• Borman demand reduction through mode shift (rail or maritime policies),</li><li>• I-65 demand reduction through mode shift (rail or maritime policies)</li><li>• Consideration of tolled truck lanes in all future highway expansion or improvements, particularly for I-65, I-70, I-80, I-90, and I-94.</li><li>• Designate truck routes (including secondary highways) and reprioritizing funding allocation for improvements to these routes.</li><li>• Additional truck parking along interstates</li><li>• Review of truck size and weight restrictions</li></ul>	<ul style="list-style-type: none"><li>• Continue or increase funding for short line/regional rail improvements (e.g., 286,000 lb capacity)</li><li>• Increased service frequency to Evansville and Remington, particularly for manufacturing industry</li><li>• Direct west coast service</li><li>• Sufficient capacity and coverage of short lines/regional rail for low-cost, short-haul bulk goods</li><li>• Develop rail-based “coal corridor” to shift intrastate coal shipments to rail</li><li>• Diversion of freight traffic from Indianapolis Union Station</li></ul>		<ul style="list-style-type: none"><li>• Work with private industry to consider Ro-Ro capability on Lake Michigan</li><li>• Pursue greater diversity of rail options for ports</li></ul>	<ul style="list-style-type: none"><li>• Streamline legislative process for acquiring abandoned rail ROW</li><li>• Coordinate with IURC and pipeline operators along new highway or abandoned rail corridors</li></ul>





## 7.0 Funding

### 7.1 FUNDING LEVELS

The primary ongoing state funding source for INDOT is the State Highway Fund (SHF). Revenue to fund the SHF is generated primarily through the 18-cent per gallon Gasoline Tax and 18-cent Special Fuels Tax applied to diesel and liquefied petroleum gas (LPG). Additional funding sources include a 16-cent per gallon Motor Carrier Fuel Use Tax and 11-cent per gallon Motor Carrier Surtax. The sources of Indiana transportation funds are shown in Figure 7.1.

Indiana has funded transportation projects and programs during the last two fiscal years at a level of \$2.4 billion per year, as shown in Table 7.1. Expenditures for FY 2008 to 2011 are estimated at \$2.6 billion per year.

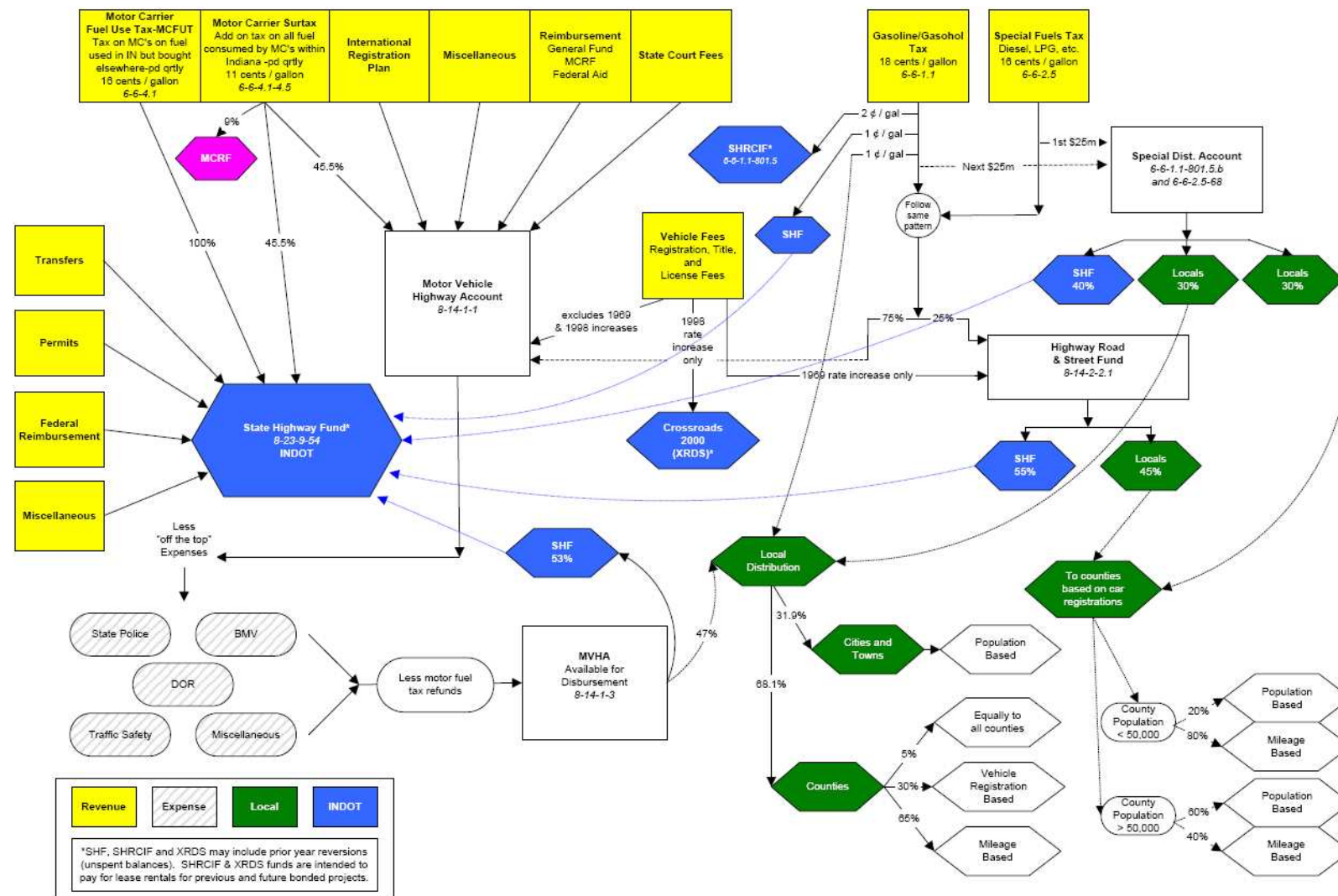
**Table 7.1 Indiana Transportation Expenditures (thousands of dollars)**

	Expenditures		Estimate	Requested		Recommended	
	FY 2006-2007	FY 2007-2008	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2009-2010	FY 2010-2011
General	993	1,768	-	1,200	1,200	-	
Dedicated	1,623,518	1,606,677	1,792,899	1,642,133	1,640,964	1,634,216	1,634,535
Federal	818,984	811,486	855,458	980,798	980,798	980,798	980,798
Local	-	-	650	700	700	700	700
Total	2,442, 503	2,418,163	2,649,007	2,623,007	2,622,462	2,615,714	2,616,033

Source: [http://www.in.gov/sba/files/as\\_2009\\_A\\_Func\\_Summary.pdf](http://www.in.gov/sba/files/as_2009_A_Func_Summary.pdf)

Note: Includes expenditures and requests by transportation function, which exceeds that of the DOT alone.

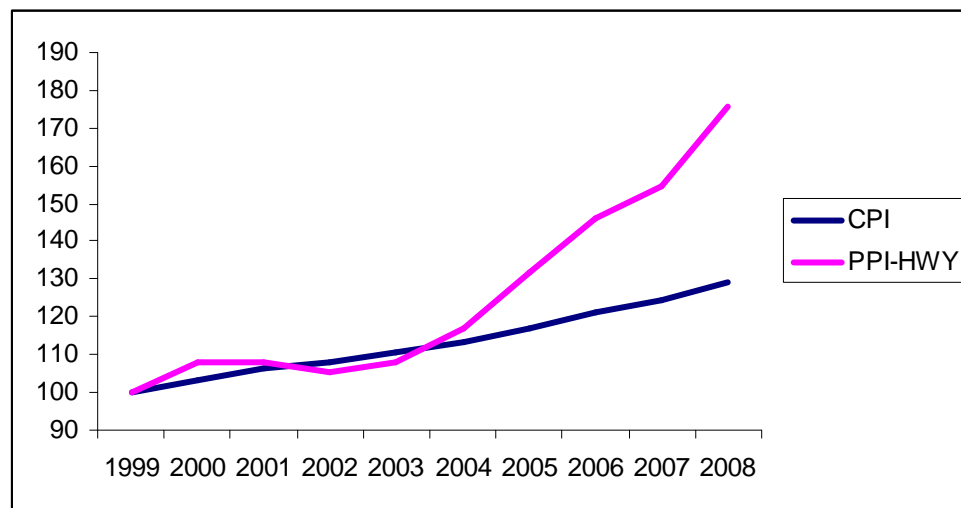
Figure 7.1 Indiana Transportation Funding (effective January 1, 2003)



Source: [http://www.in.gov/indot/files/trans\\_fund.pdf](http://www.in.gov/indot/files/trans_fund.pdf). Prepared by INDOT Budget Fiscal Management Division. Federal funds and local option taxes not included.

Infrastructure funding challenges faced by states are compounded by rising construction and maintenance costs. Construction costs have been increasing faster than the general rate of inflation over the last several years as shown in Figure 7.2, which shows growth in the Producer Price Index (PPI) for Highway Construction compared to the Consumer Price Index (CPI). These increases have caused the purchasing power of transportation dollars to decline, particularly in the last several years.

**Figure 7.2 PPI and CPI Cost Indices (1999 to 2008)**  
1999=100



Source: U.S. Bureau of Labor Statistics.

### Long-Range Plan Funding

The INDOT 2030 Long Range Plan considers five five-year implementation periods. With the large infusion of funds from leasing of the Indiana Toll Road, projects for the ten years covered by Major Moves (2006 to 2015) are fully funded. However, after 2015, transportation investments will no longer be supported by these resources and more traditional funding sources or new innovative financing programs will be needed.

From 1987 to 2006, INDOT spending on transportation has increased at an average annual rate of 5.8 percent<sup>90</sup>. To forecast revenues for 2016 to 2030, INDOT assumed the state highway fund would increase at a rate of 1 percent annually, Federal revenues at 6 percent annually, and earmarks at 1 percent annually. The long-range plan fiscal forecast is shown in Table 7.2.

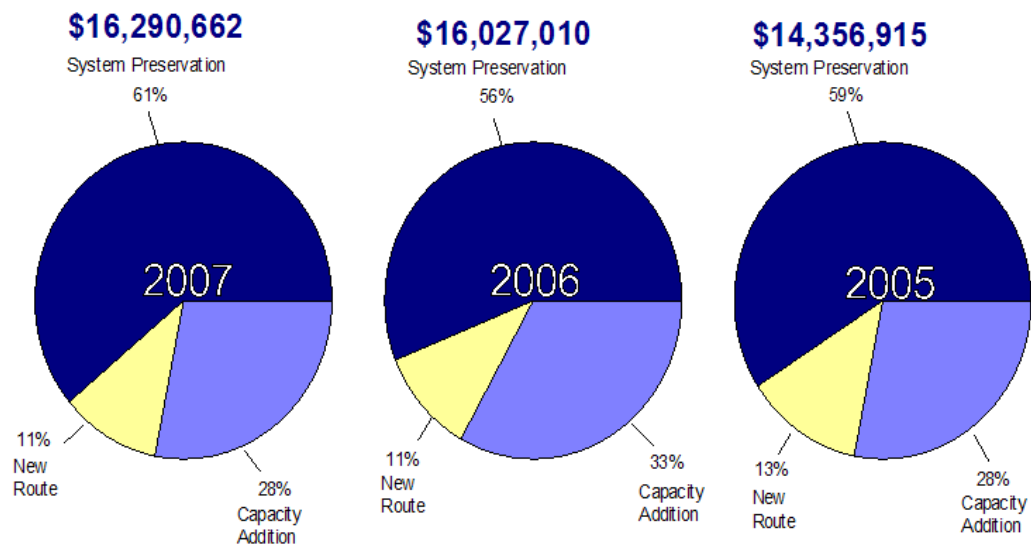
<sup>90</sup> INDOT Financial Plan Chapter 11

**Table 7.2** INDOT Long-Range Plan Fiscal Forecast 2016 – 2030 (Millions of Dollars)

Period	Preservation	Expansion	Total
2016 - 2020	3,371	2,859	6,230
2021 - 2025	3,907	2,274	6,181
2026 - 2030	4,530	4,314	8,844

Source: INDOT 2030 Long-Range Plan

While the allocation shown in Table 7.2 appears to provide a high proportion of spending for system expansion (37 to 49 percent per five-year increment), much of the costs are related to pavement preservation on existing highway segments where an additional travel lane is being added. On a national level, between 2005 and 2007 obligation of Federal funds for roadway projects has ranged from 39 to 44 percent for new capacity and from 56 to 61 percent for preservation, as shown in Figure 7.3.

**Figure 7.3** Federal Obligation for Roadway Projects

Source: FHWA Highway Statistics 2007.

## 7.2 FUNDING SOURCES AND INCENTIVES

Currently few Federal funding programs are dedicated to freight infrastructure; however, sources for highway improvements can be used to benefit trucks as well as personal automobiles. Federal transportation funding programs and financing tools are generally of four types as described below. Additional non-

DOT Federal programs may also be a resource for financing freight improvements. These opportunities are summarized in Table 7.3.

1. **Federal Formula Grant Programs** – These are generally allocated by formula to states and/or localities for specified purposes. To be used at the discretion of states and localities for various eligible passenger and freight projects, this program typically focuses on the highway mode.
2. **Special Funding Programs** – Special funding programs target specific goals and objectives with specific eligibility criteria.
3. **Discretionary Programs** – Discretionary programs are administered by U.S. DOT or other designated agencies with projects selected annually based on certain criteria specified by law. Such programs are often subject to earmarking by Congressional committees.
4. **Innovative Financing Tools** – These tools include loans, credit enhancement, and tax exempt financing programs that allow state and local governments, and in some cases private entities, to leverage various public or private revenue streams to help advance major projects.
5. **Other Non-DOT Programs** – These include programs managed by other Federal agencies that can be applied to freight improvements, as well as public-private partnerships.

**Table 7.3 Funding Opportunities**

Type of Program	Funding Program	Eligibility	Agency Approving Funding
Federal Formula Grant Programs	National Highway System (Title 23 USC Section 103)	Improvements on designated highway intermodal connectors to intermodal facilities and on NHS system.	INDOT
	Surface Transportation Program (Title 23 USC Section 133)	Projects on any Federal-aid highway, bridge projects on any public road, transit capital projects, and other state or local projects. Can be used for improvements to accommodate rail freight.	INDOT/MPOs
Special Funding Programs	Congestion Mitigation and Air Quality (CMAQ) Funds (Title 23 USC Section 149)	Projects that improve air quality by reducing transportation-related emissions in nonattainment and maintenance areas. Can be used to reduce truck, locomotive, or other emissions.	INDOT/MPOs
	Highway Bridge Program (Title 23 USC Section 144)	Replacement, rehabilitation, or preventive maintenance on bridges.	INDOT
	Rail-Highway Grade Crossings (Title 23 USC Section 130)	Elimination of hazards and installation/upgrade of protective devices at grade crossings.	INDOT/MPOs
	Truck Parking Facilities (SAFETEA-LU Section 1305)	New or expanded commercial vehicle facilities.	U.S. DOT/FHWA
	Federal Transit Administration Fixed Guideway Modernization Program (Title 49 USC Section 5309)	Improvements to passenger rail systems aged seven years or greater.	Transit Agencies
	Capital Grants for Rail Line Relocation (SAFETEA-LU Section 9002)	Rail line relocation and improvement projects.	U.S. DOT/FHWA
Discretionary Programs	Transportation, Community, and System Preservation Program (TCSP) (SAFETEA-LU Section 1117)	Projects to integrate transportation, community, and system preservation plans.	U.S. DOT
Innovative Financing Tools	Transportation Infrastructure Finance and Innovation Act (TIFIA) (Section 1601)	Loans and credit assistance for major transportation investments of national or regional significance, including public intermodal freight facilities. Private rail projects are eligible.	U.S. DOT
	State Infrastructure Banks (SIB) (Section 1602)	Infrastructure revolving funds that can be capitalized with Federal transportation funds.	INDOT/SIB Board

Type of Program	Funding Program	Eligibility	Agency Approving Funding
	Rail Rehabilitation and Improvement Financing (RRIF) (SAFETEA-LU Section 9003)	Loans and credit assistance to both public and private sponsors of rail and intermodal projects.	U.S. DOT/ FRA
	Private Activity Bonds (SAFETEA-LU Section 11142)	Tax-exempt private activity bonds for highway and freight transfer facilities. Private sponsors are eligible.	U.S. DOT
	GARVEE Bonds (Title 23 USC Section 122)	Financing instrument that allows state to issue debt backed by future Federal-aid highway grant revenues.	INDOT/Local Government willing to dedicate future grant revenues
Non-DOT Funding Programs	Economic Development Administration Funds (U.S. Department of Commerce)	Projects that promote job creation/retention in economically distressed areas that are located within an EDA designated redevelopment area.	U.S. DOC
	Environmental Protection Agency (EPA) Brownfield Revitalization Program	Grants for brownfield cleanup.	USEPA
	U.S. Army Corps of Engineers (USACE) – Harbor Maintenance Trust Fund	Funding for operations and maintenance of Federally authorized channels for commercial navigation.	USACE

Source: Financing Freight Improvements, FHWA, 2007.



Following is a discussion of each of the SAFETEA-LU-authorized programs listed above, followed by a discussion of non-DOT Federal programs.

## **Federal Formula Grant Programs**

### *National Highway System*

The National Highway System (NHS) Grant Program (Title 23 USC Section 103) funds transportation improvements on the NHS, which is comprised of the following five subsystems of roadways:

1. Interstates;
2. Other Principal Arterials;
3. Strategic Highway Network (StraHNet);
4. Major strategic highway connectors providing access between major military installations and StraHNet; and
5. Intermodal connectors.

The NHS program provides funding for roadways designated as part of the NHS, including intermodal connectors between the NHS and intermodal terminals. Eligible activities include construction, reconstruction, resurfacing, and rehabilitation on roadways connecting the NHS with truck-rail facilities, ports, pipeline terminals, or airports. The Federal share of NHS funding is 80 percent. When funds are used for interstate projects to add high-occupancy vehicle or auxiliary lanes, but not other lanes, the Federal share may be 90 percent.

### *Surface Transportation Program (STP)*

The STP Program (Title 23 USC Section 133, 104(b)(3), 140) provides flexible funding for projects on any Federal-aid highway, bridges on public roads, transit capital investments, and intracity and intercity bus terminals and facilities. Eligible freight projects include:

- Preservation of abandoned rail corridors;
- Bridge clearance increases to accommodate double-stack freight trains;
- Capital costs of advanced truck stop electrification systems; and
- Freight transfer yards.

The Federal share of STP funding is generally 80 percent. When the funds are used for interstate projects to add high-occupancy vehicle or auxiliary lanes, but not other lanes, the Federal share may be 90 percent. Certain safety improvements listed in the Highway Safety Improvement Program (23 USC 120(c)) have a Federal share of 100 percent.

## Special Funding Programs under SAFETEA-LU

### *Congestion Mitigation and Air Quality Improvement Program (CMAQ)*

The CMAQ program (Title 23 USC Section 149) funds transportation projects and programs that improve air quality (by reducing transportation-related emissions) in nonattainment and maintenance areas for ozone, carbon monoxide (CO), and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>). Both public and private entities are eligible to receive funds.

CMAQ funds have been commonly used for freight-related projects that improve air quality by reducing truck traffic. Examples of CMAQ-funded freight projects include construction of intermodal facilities, rail track rehabilitation, and new rail sidings in or benefiting nonattainment areas.

CMAQ funds may be used for projects that have clear environmental benefits. Funding priorities are a local decision and would require working through the MPO process. However, CMAQ funds are distributed by INDOT.

### *Highway Bridge Program*

The Bridge Program (Title 23 USC Section 144) provides funding for replacement, rehabilitation, and systematic preventive maintenance of bridges. Freight application of this program could include bridge rehabilitation and replacement for bridges along routes with heavy truck traffic. These bridges could then be designed to better accommodate trucks. States must use a minimum of 15 percent of the funding for projects on off-system bridges (non Federal-aid eligible roadways).

### *Rail-Highway Grade Crossings*

Formerly a set-aside of the STP program, the Rail-Highway Grade Crossing program (Title 23 USC Section 130) provides funding for projects that reduce the number of fatalities and injuries at public highway-rail grade crossings through the elimination of hazards and/or the installation/upgrade of protective devices at crossings. Legislation requires that states set aside at least 50 percent of the funding allocation for the installation of protective devices at rail-highway crossings. If all needs for installation of protective devices have been met, the funds available can be used for other at-grade crossing projects eligible under this program.

Eligible projects include:

- Grade separation or protection of at-grade crossings, such as through installation of active or passive warning devices;
- Reconstruction of existing railroad grade crossing structures, and
- Relocation of highways or rail lines to eliminate grade crossings.

This category of funds can be used in a corridor for new or modified rail grade crossings and relocations at state discretion and where a safety benefit is shown. Rail grade crossings that can show a safety benefit would clearly be eligible for this category of funds.

### *Truck Parking Facilities*

A pilot program, the Truck Parking Facilities Program (Section 1305) provides grants for projects that address the shortage of long-term parking for commercial vehicles on the National Highway System. Eligible projects include construction of new or expanded commercial vehicle parking facilities, construction of turn-outs for commercial vehicles, improvement to interchanges, electrification systems, and ITS deployments for promoting the availability of parking. States, MPOs, and local governments are eligible recipients of these program funds.

### *Federal Transit Administration Fixed Guideway Modernization Program*

FTA's Fixed Guideway Modernization Program provides funding for capital improvements on "fixed guideway" systems, including heavy rail, commuter rail, HOV systems, and light rail. Transit and commuter rail providers are eligible to receive funds from this program for systems that have been in place for at least seven years. The funds are allocated to urbanized areas by a statutory formula. Although freight projects are not eligible to use this funding source, capital improvements on passenger rail lines shared with freight rail often provide joint benefits. This program is a potential source of funding for aspects of freight projects that provide improvements to commuter rail such as the grade separation of freight and passenger tracks.

### *Rail Line Relocation Grant Program*

The Rail Line Relocation Grant Program (Section 9002) provides grants to states for local rail line relocation and improvement projects that improve highway vehicle flow, enhance quality of life, or expand economic development opportunities. SAFETEA-LU authorized \$350 million per year for fiscal years 2006 through 2009, subject to appropriations.

## **Discretionary Grant Programs under SAFETEA-LU**

### *Transportation, Community, and System Preservation Program (TCSP)*

The Transportation, Community, and System Preservation (TCSP) Program is a comprehensive initiative of research and grants. The primary purpose of the program is to investigate the relationships between transportation, community, and system preservation plans and practices and develop initiatives to improve such relationships. Grants are provided to states and local entities and potential private partners to carry out eligible projects to integrate transportation, community, and system preservation plans and practices that:

- Improve the efficiency of the transportation system of the United States;
- Reduce environmental impacts of transportation;
- Reduce the need for costly future public infrastructure investments;
- Ensure efficient access to jobs, services, and centers of trade; and
- Examine community development patterns and identify strategies to encourage private sector development patterns and investments that support these goals.

Section 1117 of SAFETEA-LU authorized the TCSP Program through FY 2009. A total of \$270 million is authorized for this program in FY 2005-2009. The TCSP Program is an FHWA Program being jointly developed with the Federal Transit Administration, Federal Rail Administration, Office of the Secretary, and Research and Innovative Technology Administration within the U.S. DOT, as well as the U.S. Environmental Protection Agency. These projects are typically earmarked by the Appropriations Committees.

These are typically small grants but may provide opportunities for INDOT to demonstrate integration of intermodal freight transportation with community goals.

### Other Discretionary Grant Programs

The following discretionary programs in SAFETEA-LU have been fully earmarked and no additional funds currently are available. However, similar programs may be available to fund freight in the upcoming transportation authorization bill.

- **High-Priority Projects (Title 23 USC 117)** - This program provided designated funding over a five-year period for 5,091 projects identified in SAFETEA-LU, some of which enhance freight mobility.
- **Transportation Improvement Projects (Section 1934)** - This program provided funding for 466 earmarked projects, some of which enhance freight mobility.
- **Projects of National and Regional Significance (Section 1301)** - This program provided funding for 25 high-cost projects that are expected to have national and regional benefits, including: 1) improving economic productivity by facilitating international trade; 2) relieving congestion; and 3) improving transportation safety by facilitating passenger and freight movement. Eligible projects include any surface transportation project eligible for Federal assistance under title 23 USC, including freight railroad projects.
- **National Corridor Infrastructure Improvement Program (Section 1302)** - This program provided funding for planning, development, and construction of 33 highway projects in corridors of national significance to promote economic growth and international or interregional trade.

- **Freight Intermodal Distribution Grant Program (Section 1306)** – This program provided funding for six intermodal freight transportation initiatives to relieve congestion and improve safety, and to address infrastructure and freight distribution needs at inland ports and intermodal freight facilities. SAFETEA-LU authorized \$6 million per year through FY 2009. Grants were \$5 million or less and tended to be port-oriented, although inland intermodal facilities were eligible.

## **Innovative Financing Tools under SAFETEA-LU**

Federal financing tools potentially applicable to freight projects include loan, credit enhancement, and tax-expenditure programs as authorized in SAFETEA-LU. Some of these tools are options for consideration at the state level. Others require that an entity exists that could be the recipient of loans or issue bonds.

### *Transportation Infrastructure Finance and Innovation Act (TIFIA)*

The TIFIA credit program (Section 1601) was originally enacted in the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), and was modified by SAFETEA-LU. This program provides credit assistance (up to one-third of the project cost) for major transportation investments of national or regional significance. Credit assistance is provided through secured loans, loan guarantees, or lines of credit. SAFETEA-LU expanded TIFIA eligibility to private rail projects. Eligibility for freight facilities includes:

- Public or private freight rail facilities providing benefits to highway users;
- Intermodal freight transfer facilities;
- Access to freight facilities and service improvements, including capital investments for ITS; and
- Port terminals, only when related to surface transportation infrastructure modifications to facilitate intermodal interchange, transfer, and access into and out of the port.

SAFETEA-LU authorizes \$122 million per year to pay the subsidy costs of supporting Federal credit under TIFIA. Lending authority is capped at \$2.2 billion annually. Repayment of TIFIA loans is required to come from tolls, user fees, or other dedicated revenue sources.

The program requires the designation of a user fee for repayment of the loan over time. In the case of the Alameda Corridor, container fees are the source for repayment. The railroads do not favor this type of fee. For the Reno rail project, hotel tax receipts were designated as a source of repayment.

### *State Infrastructure Banks (SIB)*

The new SIB program (Section 1602) under SAFETEA-LU allows all states to establish infrastructure revolving funds eligible to be capitalized with Federal

transportation dollars authorized through fiscal year 2009. In addition, the implementation of multistate SIBs is permitted in the new legislation, which may encourage states to implement and fund projects (including regional freight improvements) that cross jurisdictional boundaries. States also are allowed to create a rail account within the SIB using funds available for capital projects under Subtitle V (Rail Programs) of Title 49 USC. Through the SIB, states can issue loans and other credit tools to public and private sponsors of transportation infrastructure projects.

This is a state option. For example, Pennsylvania has set up a rail account within their SIB to provide revolving grants and loans to local projects. Indiana has a SIB in place and as of March 2003 had entered into two SIB loan agreements.<sup>91</sup>

### *Rail Rehabilitation and Improvement Financing (RRIF)*

The RRIF program (Section 9003) provides loans and credit assistance to both public and private sponsors of rail and intermodal projects. Eligible projects include acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. SAFETEA-LU authorizes \$35 million for this credit program, of which \$7 million is directed to shortline and regional railroads. In addition, SAFETEA-LU eliminated two major issues, thus increasing the attractiveness of RRIF loans to the railroads. First, it removed the requirement that collateral be provided. Second, it removed the “lender of last resort” provision, which required that applicants provide evidence that private lending was denied for the project by two lenders.

### *Private Activity Bonds (PAB)*

Title XI Section 1142 of SAFETEA-LU amends Section 142(a) of the IRS Code to allow the issuance of tax-exempt private activity bonds for highway and freight transfer facilities. Therefore, state and local governments are allowed to issue tax-exempt bonds to finance the activities of “private persons,” i.e., the private sector, to construct freight transfer facilities. SAFETEA-LU includes a cap of \$15 billion on private activity bonds.

This program allows private entities such as railroads or developers to participate with state and local jurisdictions in issuing tax-exempt debt for intermodal transfer facilities. Projects involving rail intermodal facilities are actively being considered in different parts of the country.

### *Grant Anticipation Revenue Vehicle (GARVEE) Bonds*

A GARVEE bond is a financing instrument that allows states to issue debt backed by future Federal-aid highway revenues. Eligibility for freight projects is

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<sup>91</sup>[http://www.fhwa.dot.gov/innovativefinance/ifq92.htm#sib\\_highlights](http://www.fhwa.dot.gov/innovativefinance/ifq92.htm#sib_highlights).

constrained by the underlying Federal-aid highway programs that will be used to repay debt service.

## **Other Non-DOT Programs**

### *U.S. Department of Commerce – Economic Development Administration (EDA) Funds*

EDA provides grants for projects in economically distressed industrial areas that promote job creation and/or retention. Eligible projects must be located within an EDA-designated redevelopment area or economic development center. Eligible freight-related projects include: industrial access roads, port development and expansion, and railroad sidings. Grantees must provide evidence of economic distress that the project is intended to alleviate. Grant assistance is available for up to 50 percent of the project, although the EDA could provide up to 80 percent for projects in severely depressed areas. EDA's fiscal year 2004 investments totaled approximately \$278 million, with grants ranging from \$12,000 to \$5.6 million.

### *Environmental Protection Agency (EPA) Brownfield Revitalization Program*

Through EPA's Brownfield Revitalization Program, the Federal government provides grants and loans for brownfield site cleanup. Brownfield sites could be redeveloped for commercial, residential, and/or industrial uses, including intermodal facilities. Site cleanup grants provide up to \$200,000 per site to fund cleanup conducted by cities, development agencies, nonprofit groups, and similar entities at sites they own. A 20 percent match (of funds or in-kind services) is required, although this can be waived in the case of hardship.

Brownfields Revolving Loan Fund (RLF) grants provide up to \$1 million per recipient, available for up to five years, to establish state or locally administered loan funds. Local governments, states, and entities such as redevelopment agencies, regional councils, and land clearance agencies are eligible for these capitalization grants. A 20 percent non-Federal cost share in the form of money, labor, services, or materials is required.

### *U.S. Army Corps of Engineers (USACE) – Harbor Maintenance Trust Fund*

The Harbor Maintenance Trust Fund (HMTF) provides funding for operations and maintenance (i.e., dredging costs) of federally authorized channels for commercial navigation. Ports located along Federal navigation channels are eligible to receive HMTF funding. The FY 2007 budget included approximately \$2.3 billion for Operations and Maintenance, of which \$707 million (31.3 percent) was appropriated from the HMTF. The funds are distributed among 21 designated USACE regions.

### *Public-Private Partnerships*

Historically, the public and private sectors have played different roles in enhancing freight transportation. For example, in the case of trucking, the public sector has built, owned, and operated transportation infrastructure – predominantly highways – and the private sector has used that infrastructure to conduct freight operations. With the rail mode, however, the private sector both owns the infrastructure and operates it, and the public sector promulgates and enforces safety regulations. Public-private partnerships can take advantage of the public and private sector’s shared needs for and benefits from an efficient freight system. Such partnerships can increase the potential for leveraging private sector efficiencies and expertise in the construction and operation of freight infrastructure.

### **Federal Freight Funding Role**

When developing funding strategies, it is important to recognize the potential for significant changes in current transportation funding mechanisms on the horizon. Transportation stakeholders at the national level have recognized that the Federal approach to transportation planning and funding no longer is functioning effectively. The *Transportation for Tomorrow* report of the National Surface Transportation Policy and Revenue Study Commission released in January 2008<sup>92</sup> states “the surface transportation system of the United States is at a crossroads” and “a significant increase in public funding is needed to keep America competitive.”

The report recommends streamlining the current 108 Federal transportation programs into 10 programs, with 1 dedicated to freight. The report strongly links goods movement to U.S. economic competitiveness:

*It is not an overstatement to say that the Nation’s potential for the creation of wealth will depend in great part on the success of its freight efficiency. Without changes, countries such as China and India, with more dynamic policies for transportation and economic growth, will challenge the United States in economic power and world influence.*

A dedicated freight program would represent a major opportunity for increased planning and funding resources dedicated to goods movement. A second program of the 10 recommended in the plan targets addressing metropolitan congestion. A program that addresses regional congestion could provide significant benefits for truck traffic that shares the roadways with personal vehicles.

The *Transportation for Tomorrow* report recommends several dedicated sources of funds for the Federal freight program, including increased gas tax revenues,

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<sup>92</sup>[www.transportationfortomorrow.org](http://www.transportationfortomorrow.org).



investment tax credits for freight capacity expansion, a portion of Customs duties, a Federal freight fee, highway tolling, and public private partnerships.

Regarding a freight fee, the report states, “The payers of such a fee must realize the benefit of improved freight flows resulting from projects funded by the freight program. Such a fee should be designed to ensure that commerce is not burdened by local and state proliferation of such fees; no mode of transportation or port of entry is disadvantaged; and the ultimate consumer bears the cost.”

While recommending a series of increases in the Federal gas tax in the near term, the report points toward an eventual transition to tolls and vehicle mileage taxes. This was a major point of disagreement among Commission members; a minority report written by the U.S. Secretary of Transportation recommended that tolling, congestion pricing, and public-private partnerships be implemented in the near term. It was argued that pricing measures are an efficient method of managing the use of scarce transportation resources and can provide a fair method of funding improvements.

Financing options for transportation were explored by the second policy commission authorized by SAFETEA-LU, the National Surface Transportation Infrastructure Financing Commission, which published *Paying our Way – A New Framework for Transportation Finance*<sup>93</sup> in February 2009. The study states the transportation system is underpriced, resulting in excess demand for transportation. The report concludes the funding gap for highways and transit at the Federal level totals “nearly \$400 billion in 2010-2015 and grows dramatically to about \$2.3 trillion through 2035.” To meet these needs in the short term, the Commission recommends increasing the Federal gasoline and diesel fuel taxes by \$.10 and \$.15, respectively. The report states that \$.02 of the diesel tax increase should be dedicated specifically to freight investment.

The report evaluates the viability of various forms of fees and taxes, as shown in Table 7.4. Several freight-based fees are considered, with four Federal options rated as having strong potential: a heavy truck vehicle use tax, truck/trailer sales tax, container fee and truck tire tax. At the state level, the study finds the most promising financing strategy to be facility level tolling and pricing, which would derive revenue from both freight and passenger users. According to the study, a consensus has emerged supporting a Federal funding system based on direct user payment, in the form of paying per mile driven.

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<sup>93</sup>[http://financecommission.dot.gov/Documents/NSTIF\\_Commission\\_Final\\_Report\\_Advance%20Copy\\_Feb09.pdf](http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Advance%20Copy_Feb09.pdf)

**Table 7.4 Revenue Option Evaluation Summary**

Strong	Moderate	Weak	Not Applicable/ Seriously Flawed
<b>Federal Options</b>			
<ul style="list-style-type: none"> <li>• Vehicle miles traveled fee</li> <li>• Automobile tire tax</li> <li>• Motor fuel tax</li> <li>• Carbon tax/cap and trade</li> <li>• Customs duties</li> <li>• Heavy vehicle use tax</li> <li>• Truck/trailer sales tax</li> <li>• Vehicle registration fee</li> <li>• Container fee</li> <li>• Tariff on imported oil</li> <li>• Sales tax on motor fuels</li> <li>• Truck tire tax</li> </ul>	<ul style="list-style-type: none"> <li>• Freight waybill tax</li> <li>• Vehicle sales tax</li> <li>• Harbor maintenance tax</li> <li>• General fund transfer</li> </ul>	<ul style="list-style-type: none"> <li>• Freight ton-mile tax</li> <li>• Driver's license surcharge</li> <li>• Bicycle tire tax</li> <li>• Dedicated income tax</li> <li>• Auto-related sales tax</li> <li>• Freight-ton based tax</li> <li>• General sales tax</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle inspection and traffic citation surcharge</li> <li>• Vehicle personal property tax</li> <li>• Windfall profits tax</li> <li>• Petroleum franchise tax</li> <li>• Minerals severance tax</li> <li>• Federal tax on local transit fares</li> <li>• Federal tax on local parking fees</li> </ul>
<b>State and Local Options Benefiting from Federal Action</b>			
<ul style="list-style-type: none"> <li>• Facility level tolling and pricing</li> </ul>	<ul style="list-style-type: none"> <li>• Proceeds of asset sales, leases, and concessions</li> </ul>	<ul style="list-style-type: none"> <li>• Cordon area pricing</li> <li>• Passenger facility charges</li> </ul>	<ul style="list-style-type: none"> <li>• Development and impact fees</li> <li>• Tourism related taxes</li> <li>• Tobacco, alcohol and gambling taxes.</li> </ul>

Source: *Paying Our Way-A New Framework for Transportation Finance*, National Surface Transportation Infrastructure Financing Commission, February 2009.

## **State Funding Programs and Policies**

Some of the more transportation-specific state funding programs that can be applied to freight-related projects are described below.

### *Industrial Rail Service Fund*

The Industrial Rail Service Fund (IRSF) was initiated in 1982 and is administered by INDOT's Rail Office. It provides grants or low-interest loans to Class II and III railroads and port authorities to purchase or rehabilitate property to be used for rail transportation and to rehabilitate railroad infrastructure. IRSF funding has generally focused on rehabilitation projects to upgrade the condition of Indiana's Class III railroads.

The IRSF was funded with .029 percent of the state sales tax as of FY 2009, as determined annually by the General Assembly. . The maximum grant award amount is \$350,000. However, grant awards to port authorities may not exceed 20 percent of gross sales and tax use receipts deposited in the previous fiscal year, and in FY 2008, individual grant awards to port authorities are limited to \$184,000 out of a total of \$1.3 million available in the IRSF. Railroads and port authorities are limited to grants of no more than 75 percent of total project cost. To support economic growth initiatives, \$200,000 per year is available to the Indiana Economic Development Corporation for rail infrastructure projects to help attract job-creating business development.

### *Railroad Grade Crossing Fund*

The Railroad Grade Crossing Fund (RRGCF) administered by INDOT's Office of Roadway Safety provides resources for railroad crossing safety improvements to local jurisdictions, counties, and Class II and III railroads. The RRGCF is divided into two programs: the Crossing Closure Program and the Other Safety Improvements Program. The Crossing Closure Program is designed to compensate communities that close a crossing, which is deemed by the Federal Railroad Administration (FRA) to be the most effective safety treatment. A total of \$300,000 was available in the Crossing Closure Program for FY 2008 as appropriated by the General Assembly. Awards ranging from \$15,000 to \$55,000 are made based on the predicted accident rate at a crossing. The Other Highway Safety Improvements Program was funded at \$700,000 for FY 2008 with a maximum grant of \$50,000. Grants are awarded based on the community and county population, volume of rail traffic, and project type.

### *Airport Development Fund Programs*

The Airport Development Fund Program, administered by the Office of Aviation, is used to develop the 69 public use airports deemed critical to the Indiana air transportation system. State code section IC8-21-11-5 states that the program shall foster airport development with special emphasis on improve-

ment of airports as an economic development tool. Indiana airports other than Indianapolis International Airport that receive an FAA Airport Improvement Program (AIP) grant are eligible for a Federal matching grant from the State of up to 2.5 percent of eligible costs. Separate state and local grants may be awarded for up to 50 percent of eligible airport costs for projects, including runway extensions, terminal buildings, hangars, and airport fuel service.

Unlike Indiana's rail programs, no dedicated funding source exists for airport investment programs. General Fund and Build Indiana Fund (BIF) appropriations made by the Indiana General Assembly are the two primary funding mechanisms. Biennial expenditures have been approximately \$2 million, but the program has been suspended in recent years due to budgetary constraints. The Airport Development Revolving Loan Program was established in 1990 but has not been funded to date.<sup>94</sup>

### *Build Indiana Fund*

The Build Indiana Fund<sup>95</sup> was created via the 1989 Lottery Act from gambling revenue. According to the law establishing the program (IC-4-30-17), funds are permitted to go to government units for state and local capital projects. Each year \$250 million is distributed into the fund. From 1989 through June 2007, the Build Indiana Fund received \$4.38 billion in lottery and gaming revenues and transfers. The vast majority of funds are distributed to the Vehicle Excise Tax Replacement Account, a mechanism developed to compensate for a reduction in state automobile excise taxes. Any surplus remaining in the Build Indiana Fund after distributions to the Motor Vehicle Excise Tax Replacement Account may be distributed for State and local capital projects and other appropriations specified by the General Assembly. As shown in Table 7.5, \$6.1 million has been distributed to INDOT, \$60 million to the Local Road and Street Account, and \$408 million to Build Indiana Fund Local Projects between 1989 and 2007.

**Table 7.5     Build Indiana Fund Disbursements**  
*1989 to 2007*

State Totals by Expenditure/Distribution Category	Fiscal Year 2007	Cumulative Total Fiscal Years
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<sup>94</sup>INDOT 2030 Long-Range Transportation Plan, Chapter 4: Multimodal Coordination.

<sup>95</sup> [http://www.state.in.us/sba/files/LGS\\_Distribution\\_Report\\_2007.pdf](http://www.state.in.us/sba/files/LGS_Distribution_Report_2007.pdf)

		<b>1989-2007</b>
Excise Tax Reduction	236,212,440	2,524,785,644
Supplemental Tuition Support		293,207,699
City and Town Police and Fire Pensions	30,000,000	336,332,833
Job Creation and Economic Development		30,000,000
Build Indiana Fund Local Projects	27,034	407,973,367
Local Road and Street Account Distribution		60,000,000
Indiana Technology Fund	4,750,000	182,924,295
Teachers' Retirement Fund Pre-1996 Account	30,000,000	462,600,963
Teachers' Retirement Fund 1996 Account		60,000,000
21 <sup>st</sup> Century Research and Technology Fund		50,699,998
Digital Television Conversion for Indiana PBS Station		17,879,380
Little Calumet River Basin Commission		3,000,000
Indiana University Proton Therapy		10,000,000
Purdue University Nonotechnology		5,000,000
Higher Education Technology		29,000,000
Department of Natural Resources State Projects		1,900,000
Indiana Department of Transportation Projects		6,156,833
Stream Pollution Control Grants		22,800,000
Board of Finance Transfer to the General Fund		247,304,622
Property Tax Replacement Fund Transfer		375,000,000
1992-1993 Biennium Appropriations to the Highway Construction Account		72,500,000
<b>Grand Total – Build Indiana Fund Distributions</b>	<b>300,989,474</b>	<b>5,199,065,634</b>

Source: Distribution of Build Indiana Fund and Lottery and Gaming Revenues for Fiscal Year ending June 30, 2007, Indiana State Budget Agency

### *State Sponsored Incentives*

Also highlighted in FHWA's *Financing Freight Improvements* is the fact that "other state funding sources, financing tools, and institutional arrangements can raise dollars to fund freight improvements and/or match grant funds." This can include various sources: "user fees and/or tolls, dedicated taxes, special taxing and assessment districts, and equity and in-kind contributions. Financing tools such as tax-supported revenue and tax-exempt facility bonds, and institutional arrangements, such as joint development, revenue-sharing arrangements/leases, and cost-sharing/voluntary agreements, also provide alternative approaches to funding freight projects."<sup>96</sup> Indiana offers many of these alternative approaches. In addition to infrastructure and safety funding programs discussed above, the State has a history of aggressively marketing itself toward attracting new businesses, many of which are heavily freight intensive. Economic development agencies that work to attract and retain businesses are discussed in Chapter 5.

The Indiana Economic Development Corporation offers an array of state-sponsored incentives to entice business creation, expansion, and relocation. Given Indiana's centralized, "crossroads of America" location, industry sectors that rely heavily on freight transportation are among those taking advantage of incentives. Industry initiatives are in place for: Advanced Manufacturing, Agriculture, Life Sciences, Logistics, and Motorsports, among others.<sup>97</sup> In effect, a direct correlation can be drawn between state economic development initiatives and freight transportation issues. Funding mechanisms that are available in addition to traditional state programs include:<sup>98</sup>

- Industrial Development Grant Fund (IDGF);
- Small Business Innovation Initiative (SBIR/STTR);
- 21<sup>st</sup> Century Research and Technology Fund;
- Tax-exempt Bonds;
- Loan Guaranty Program;
- Capital Access Program (CAP);
- Certified Technology Park Program;
- Regional Economic Development Partnership Programs;
- IEDC Regulatory Ombudsman;

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<sup>96</sup>FHWA *Financing Freight Improvements*.

<sup>97</sup> Indiana Economic Development Corporation, 2008

<sup>98</sup> Indiana Economic Development Corporation, Grants and Incentives.  
<http://www.in.gov/iedc/grants.htm>

- “Shovel Ready” site certification program;
- Economic Development for a Growing Economy Tax Credit (EDGE);
- Hoosier Business Investment Tax Credit (HBITC);
- Industrial Recovery Tax Credit;
- Venture Capital Investment Tax Credit;
- Headquarters Relocation Tax Credit; and
- Workforce Training and Development Funding.

As shown in Table 7.6, a number of states have developed tools to finance freight improvements such as grant and loan programs for which freight projects are eligible. State funds may be financed by general revenue or specific taxes. Types of programs include those that offer long-term loans at below-market costs, grants for projects that promise significant job creation or retention, and matching funds for projects of statewide significance.

**Table 7.6 Illustrative State Grant and Loan Programs**

Program	State	Highway	Rail	Airport	Port	Intermodal
California Infrastructure and Economic Development Bank (I-Bank)	California	Yes	No	No	Yes	Yes
California Maritime Infrastructure Bank (CMIB)	California	No	No	Yes	Yes	No
Florida Seaport Transportation and Economic Development Funding (FSTED)	Florida	Yes	Yes	No	Yes	Yes
Florida Strategic Intermodal System (SIS)	Florida	Yes	Yes	Yes	Yes	Yes
Illinois Rail Freight Program (IRFP)	Illinois	No	Yes	No	No	No
Indiana Rail Service Fund/Grade Crossing Improvement Fund	Indiana	Yes	Yes	No	No	No
Maine Industrial Rail Access Program (IRAP)	Maine	No	Yes	No	No	No
Michigan Rail Loan Assistance Program (MiRLAP)	Michigan	No	Yes	No	No	Yes
Michigan Freight Economic Development Program	Michigan	No	Yes	No	No	No
Michigan Local Grade Crossing Program	Michigan	Yes	Yes	No	No	No
Michigan Grade Separation Loan Program	Michigan	Yes	Yes	No	No	No
Minnesota Port Development Assistance Program	Minnesota	No	No	No	Yes	No
Minnesota Rail Service Improvement Program	Minnesota	No	Yes	No	No	Yes
Mississippi Multimodal Transportation Improvement Program	Mississippi	No	Yes	Yes	Yes	No
New York State DOT Industrial Access Program (IAP)	New York	Yes	Yes	No	No	No
Ohio Rail Development Commission (ORDC)	Ohio	No	Yes	No	No	No
Oregon Port Revolving Fund (OPRF)	Oregon	No	No	No	Yes	No
Oregon Transportation Investment Act	Oregon	Yes	No	No	No	No
Pennsylvania Rail Freight Assistance Program (RFAP)	Pennsylvania	No	Yes	No	No	No
Pennsylvania Airport Assistance Program	Pennsylvania	No	No	Yes	No	No
Tennessee Aeronautics Transportation Equity Fund (TEF)	Tennessee	No	Yes	Yes	Yes	No
Texas Rail Relocation and Improvement Fund	Texas	No	Yes	No	No	No
Virginia Rail Enhancement Funds (VREF)	Virginia	No	Yes	No	No	No
Virginia Rail Industrial Access Program (RIAP)	Virginia	Yes	Yes	No	No	No
Washington Freight Mobility Strategic Investment Board (FMSIB)	Washington	Yes	Yes	No	Yes	No
Wisconsin Harbor Assistance Program	Wisconsin	No	No	No	Yes	No
Wisconsin Rail Freight Programs	Wisconsin	No	Yes	No	No	Yes

Source: *Financing Freight Improvements*, FHWA, 2007.



## **Regional Incentives**

Most regions in Indiana have substantial amounts of developable land with which to attract potential businesses. In addition, many have efficient transportation connections, which is a defining criterion for freight-reliant businesses. In this sense, many local economic development incentive programs are directly applicable to projects involving a freight transportation element.

Ten regional economic development organizations are dispersed throughout the State, along with county-level development authorities. Local incentives tend to be similar, all offering real and personal property tax abatements, along with competitive tax rates, and packages of state-sponsored incentives listed above.

Terre Haute, for example, provides an array of potential incentives for business expansion and attraction. Packages are assembled by the regional Economic Development Corporation and can include the following:

- Property Tax Abatement;
- Tax Increment Financing (TIF);
- Tax Exempt Bonds; and
- Indiana Economic Development Corporation Certified Technology Park Certification.

## *Foreign-Trade Zones*

Foreign-Trade Zones (FTZs) are granted to applicant agencies by the FTZ Board, comprised of the U.S. Secretaries of Commerce and the Treasury. There are six general-purpose FTZs in Indiana. Three are granted to the Indiana Ports Commission, one to the Indianapolis Airport Authority, one to the St. Joseph County Airport Authority, and one to the City of Fort Wayne<sup>99</sup>. In addition, there are 21 special-purpose Subzones in the state, which serve individual companies that cannot relocate to the general purpose sites. The largest concentration of Subzones is affiliated with the Indianapolis International Airport FTZ, which has 15 affiliated Subzones. Ford, Chrysler, Caterpillar, Deere & Company, Nissan, and Pfizer are among the corporations taking advantage of FTZ Subzones in Indiana. FTZs can serve as an additional incentive for companies engaged in international trade.

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<sup>99</sup>United States Department of Commerce, International Trade Administration.  
<http://www.trade.gov/ia/index.asp>



## 8.0 Project Evaluation

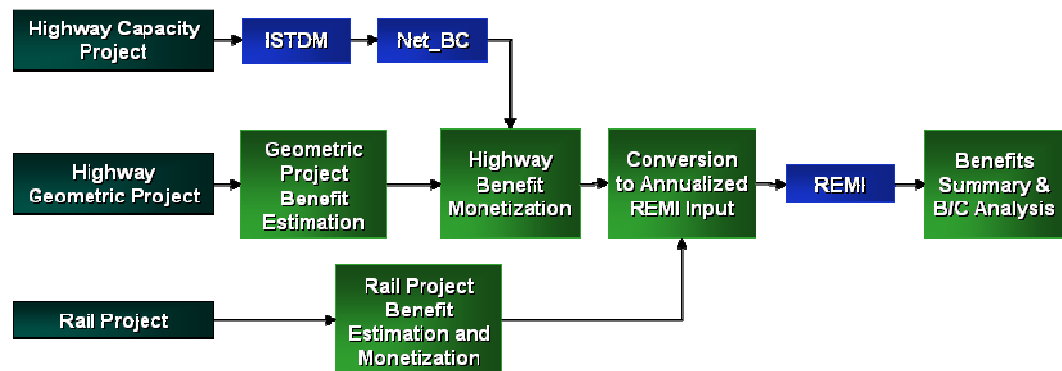
The economic benefits evaluation of freight-related investments (either at the project or program level) links travel model and other typical transportation evaluation results for freight investment projects to an economic impact model that translates transportation impacts, such as user benefits, reliability, and accessibility improvements into industry cost and competitiveness impacts. These direct economic impacts lead to gains in employment, income, and gross state product (GSP). This approach combines current and projected traffic volume-based economic impacts with transportation/economic impacts based on other factors (e.g., market accessibility improvements).

Full economic effects, along with preliminary cost estimates of the infrastructure improvements, provide the ability to prioritize potential projects into a more narrowly focused set of investments that are targeted at supporting freight transportation and the Indiana economy.

However, the most successful freight programs are those integrated into existing processes, rather than those created from entirely new processes. The analysis methodology itself utilizes various models of MCIBAS (the statewide travel model, NET\_BC, and REMI), already part of INDOT's suite of tools. Further, the results of the process below can be integrated as an additional "freight" factor in the scoring and prioritization process used by INDOT (see Chapter 5).

### 8.1 METHODOLOGY OVERVIEW

The process addresses three distinct types of freight related infrastructure improvements: highway capacity improvements; highway geometric improvements; and rail improvements. The procedures for evaluating each of the three types of projects are depicted in Figure 8.1. While this methodology provides a tool for evaluating and prioritizing freight projects in order to compare the economic benefits and costs of competing projects, availability of data and analysis tools for the three different modes requires slightly different evaluation processes. Therefore, though the methodology ultimately provides the same types of outputs for each of the three infrastructure improvements, the results should be compared to other projects of the same type and mode.

**Figure 8.1 Freight Project Evaluation Methodology**

The economic impacts generated by highway capacity improvement projects are based on the increase in user benefits that would result from building these facilities. Improvements to highway infrastructure have a direct impact on transportation system performance. By adding capacity, travel times are reduced, resulting in lower congestion levels, reduced fuel consumption and enhanced safety.

User benefits in the form of time savings and safety benefits are calculated based on the travel demand model (ISTDM) and NET\_BC post-processor. For geometric projects, whose benefits cannot be calculated using the ISTDM, benefits in terms of travel time, delay, and safety improvements, if available from previous studies, can be used. Where information from other studies on projected benefits from a geometric improvement is not available, data from national sources are used to estimate likely percent improvements.

User benefits are split into three categories based on mode: truck, business automobile, and non-business automobile trips. The value of the user benefits for each of these varies, largely due to trip purpose and differences in value of time:

- **Trucks and business auto** -- The user benefits for trucks and business automobiles represent a cost savings for businesses (due to lowering delay and fuel costs) which then translate into productivity improvements. Productivity gains (and increased competitiveness) add to increased business activity which in turn generates multiplier effects on employment, income and output which can also be quantified.
- **Non-business auto** -- User benefits for non-business automobile trips are also valued by using estimated value-of-time measures. However, private trip user benefits do not result in productivity impacts that generate changes in aggregate economic variables. As a result, these non-business user benefits are estimated but not included in the regional economic impact (REMI) analysis. Rather, these user benefits for non-business travel are accrued by private motorists and contribute to their respective welfare. Hence, they are added to the post-REMI regional economic benefits, prior to performing the benefit-cost analysis.

The business portions (trucks and business auto) of the monetized user benefits (from NET\_BC) serve as inputs to the REMI model (a dynamic simulation of the Indiana economy) in order to calculate the macroeconomic benefits (e.g., gross state product) that might accrue as a result of the construction of the roadway improvement<sup>100</sup>. The GSP benefits from REMI and non-business auto benefits are then combined and compared to the project costs--capital as well as operation and maintenance--to estimate the benefit-cost ratio of implementing the improvement.

Unlike the roadway improvement projects, rail improvement projects do not have readily-available modules similar to the ISTDm and NET\_BC to produce monetized user benefits. The approach to identifying the benefits resulting from rail improvement projects is therefore based on measuring production cost savings that would result from the proposed improvement. This approach requires considerable knowledge of how the rail line is used and a solid estimate of the time savings that would be associated with the rail improvement. These data should be available on a project-by-project basis to be provided by the project sponsor when it is submitted for funding consideration.

In order to assemble the overall rail user benefits that will be used as a cost savings for the REMI model, information on the following factors is required:

- Annual throughput affected by proposed investment
- Value per ton
- Cost of capital
- Travel time savings from proposed investment

Appendix A provides more detail on performing the evaluation methodology.

## **8.2 CASE STUDY EVALUATION**

Three case studies were selected to test and demonstrate the use of the evaluation methodology. A breadth of projects was evaluated: one highway capacity project, one highway geometric project, and one rail project. Though the methodology ultimately provides the same types of outputs for each of the three infrastructure improvements, the results should be compared to other projects of the same type and mode.

### **Highway Capacity Improvement**

The Ohio River Bridges project of Kentucky and Indiana is currently underway in the Louisville, Kentucky metropolitan area. The project involves doubling I-65 capacity over the Ohio River with a new bridge and expanded approach on the

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<sup>100</sup> Business attraction benefits are not included.

Indiana side; building an additional bridge at I-265 at the eastern end of the metropolitan area, with a connection to the existing I-265; and several other capacity and bottleneck improvements on the Kentucky side.

The specific design parameters of the project, as well as construction costs and other parameters, were taken directly from the project website or estimated based on the website (Table 8.1). As the existing future year 2030 ISTDM highway network already contains the project as a committed project under constructed, the project was removed from the network. The ISTDM was run for both the network with the project and without to output changes in volumes, travel times, and delay. These values were post-processed using NET\_BC data to obtain travel time savings, accident cost savings, and vehicle operating cost savings for heavy trucks as well as autos and non-heavy trucks. These values were then prepared for input into REMI.

**Table 8.1 Highway Capacity Improvement – Case Project Specifications**

Specification	Value
Estimated Opening Date of Major Capacity Improvements (estimated for modeling)	2018
Construction Cost	\$1.15 billion <sup>a</sup>
Operating/Maintenance Cost	\$2 million per year

Source: The Ohio River Bridges Project of Kentucky and Indiana, <http://www.kyinbridges.com/>

Notes: a. Estimated INDOT portion of construction costs.

The freight-oriented project evaluation methodology described above output a \$885 million present value for this project, with benefit-cost ratio of 0.8.

## Highway Geometric Improvement

Intersection improvements have been proposed at Dan Jones Road and U.S. 36 in Avon. This intersection is in close proximity to the Avon Yard, one of Indiana's major intermodal facilities, and is six miles from Indianapolis International Airport. The primary recommended improvements call for new right turn lanes; a median; and signal phase modifications. Project parameters and basic transportation impacts were taken from an existing study of the intersection; other parameters were estimated based on typical average values or local data (Table 8.2).

The discounted benefits for this project total \$43.8 million according to the evaluation methodology, with a benefit-cost ratio of 77.3.

**Table 8.2 Highway Geometric Improvement – Case Project Specifications**

Specification	Value
Estimated Opening Date	2011 <sup>a</sup>
Construction Cost	\$500,000 <sup>b</sup>
Marginal Operating/Maintenance Cost	\$5,000 per year
Delay Savings, Auto and Non-Heavy Truck	15,000 hours/year
Delay Savings, Auto and Non-Heavy Truck	800 hours/year
Estimated PDO Crashes	11 <sup>c</sup>
Estimated Injury Crashes	3 <sup>c</sup>
Estimated Fatal Crashes	0 <sup>c</sup>

Source: a. Estimated from *Traffic Operations Analysis: Intersection of Dan Jones Road and US 36*, Schneider, September 2006.

b. Estimated from typical costs provided in *Interactive Interstate Management System 3.0*, Appendix A, Cambridge Systematics.

c. Estimated from neighboring intersections with available state crash data

### Freight Rail Improvement

Freight rail improvement projects are not normally modeled by public sector transportation agencies, so extensive data and parameters on possible benefits for proposed benefits are often not publicly available. As part of the *Binghamton Regional Freight Study*, Cambridge Systematics performed benefit-cost analyses on several potential freight rail projects in the area. Projects included:

- Reduce grade leading to tunnel
- Restore bridge and improve lines to handle 286k pound cars
- Reduce conflicts between NS and CP trains
- Through-tracks to separate through trains
- New intermodal yard/inland port

The parameters for these evaluations utilized typical industry values and local data. Using these approximate values, a typical sample project was developed for Indiana along a rail line with an estimated non-bulk annual throughput of 300,000 tons that would save each train 60 minutes of travel time (Table 8.3).

Converting these values to industry cost savings and inputting them into REMI, the evaluation methodology outputs \$49 million in discounted benefits, with a benefit-cost ratio of 4.9.

**Table 8.3     Freight Rail Improvement – Case Project Specifications**

Specification	Value
Estimated Opening Date	2018
Construction Cost	\$10 million <sup>a</sup>
Annual Throughput (non-bulk)	300,000 tons
Travel Time Savings	60 minutes/train <sup>a</sup>

Source: a. Estimated from *Binghamton Regional Freight Study*, Cambridge Systematics, 2008.



## 9.0 Implementation and Action Plan

### 9.1 POLICY RECOMMENDATIONS

The full list of recommended policy actions, organized by policy area, is shown in Table 9.1. Some policy gaps, needs, and recommendations presented in Chapter 6 fall into several different policy areas, but are presented only once in Table 9.1 to avoid redundancy. The table provides other organizations that are likely to be involved in each strategy outside of INDOT. Strategies are also classified according to level of priority (low, medium, or high) and suggested phasing (short-, mid-, or long-term).

Due to the nature of policy strategies, a shorter time frame is often more appropriate. Though priorities may differ, most strategies can and should be pursued in parallel and as soon as staff resources allow. Many policy strategies can have impacts far outweighing implementation costs relative to large infrastructure projects; additionally, some policy strategies may be necessary for the successful implementation and completion of freight infrastructure projects.

The freight link to planning and programming is the broadest policy strategy listed, and is also among the most important. It ensures that freight is considered at all levels of INDOT planning and programming. Without this link, it is difficult to achieve most other policy recommendations. Some elements related to implementation from a planning and programming perspective, such as funding sources, funding availability, and Federal regulations and guidance related to freight are likely to change with pending authorization of a new transportation bill likely to occur later in 2009.

Communication is also a vital component for the future of freight transportation in Indiana; it should be continuous, multi-faceted, and targeted to numerous audiences. Communication helps to present information on projects and policies to stakeholders; obtain feedback and useful information for planning and better refining existing proposals; and achieve buy-in and support. These audiences can range from other state and local governments and agencies; Federal, state, and local decision-makers; and private industry. Ongoing and open communication will help project and policy implementation, particularly the acquisition of funding. It improves coordination, consistency, and creates a stronger unified voice for freight funding and improvements. Communication also includes data and system understanding policies, such as real-time communication of freight system conditions.

Examining the full spectrum of funding sources currently accessible to INDOT and possible funding sources INDOT has not yet tapped into is among the

highest policy priorities. The process of navigating regulations related to different funding pools can sometimes require a lengthy learning curve, and some funding mechanisms could even require legislative or organizational changes.

**Table 9.1 Policy Implementation Plan Summary**

Policy Area	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
Freight Technical Lead	Dedicated staff/resources for freight planning	High	Short	-
Freight System Understanding	Centralized, comprehensive information for carriers	Med	Mid	Carriers; State Police; Other agencies with relevant data
Link to Planning/Programming	Boost understanding and consideration of freight by MPOs	High	Ongoing	MPOs
	Encourage formation of, and then support through sharing of best practices, MPO Council Freight Committee	High	Short	MPOs
	Develop mechanisms for ongoing communications with private shippers and carriers	High	Short	Shippers/Carriers
	Work with INDOT long-range planning office to improve processes for monitoring of industry/major land use developments affecting freight	Med	Mid	Local governments
	Implement methods for calculating public benefits of freight investment; communicate to each audience	High	Short	Various
Data	Work with the Operations Division to ensure that system analysis processes regularly identify freight impacts of system and operations deficiencies	Med	Mid	-
	Regularly update commodity flow data	Med	Ongoing	Indiana University; Private data companies
	Continuously evaluate, support MPO and regional freight data needs	High	Ongoing	MPOs
	Solicitation on regional conditions related to freight by INDOT district offices	Med	Mid	-
Stakeholder Outreach	Freight communications tools, such as listservs	Low	Short	-

Policy Area	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
Training & Education	Enhance freight information and organization on INDOT website; develop web content on benefits of all freight modes	Low	Short	-
	Assist regional agencies/MPOs coordinating freight developments between jurisdictions	High	Short	MPOs, other regional/local governments
	Promote participation in existing training programs, such as US DOT programs	Med	Short	USDOT; MPOs, other regional/local governments
	Develop and lead state-specific freight programs for MPOs	High	Mid	MPOs, other regional/local governments
Advocacy	Monitor logistics workforce needs and educational supply; work with educational institutions and employers to ensure synergy	Med	Mid	Logistics industry; state universities
	Share views on importance of freight as part of Federal/state legislative outreach	High	Short	Congress; State legislature
Safety	Monitor progress of freight-related SHSP initiatives	High	Short	State Court Administration; State Police
	Monitor heavy truck diversion in northern IN due to rising tolls	Med	Ongoing	Toll Road
	Examine legislation for maintenance and liability issues related to trucking, particularly equipment	Med	Mid	Trucking/logistics industry; State legislature
Truck Routes	Study impacts of truck route designation using data-driven scoring process; should be used to allocate funds	Med	Mid	Trucking/logistics industry; State legislature
Truck Size & Weight	Work with State Police to create database for information sharing on problem motor carriers	Med	Long	State Police
	Work with legislature, State Police, DOR to improve truck size & weight enforcement.	Med	Short	State legislature; State Police; DOR
	Study modifying restrictions to allow increased truck sizes & weights along routes of regional significance	Med	Mid	Trucking/logistics industry; State legislature
Truck Parking	Review results of Midwest truck parking study; provide targeted parking and amenities	High	Mid	Trucking industry

Policy Area	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
	Utilize ITS for providing real-time parking information	Low	Long	-
	Evaluate private development/ operation of truck parking areas	Low	Mid	Private industry; trucking industry
Funding	Communicate support of dedicated freight and metropolitan congestion relief programs recommended in National Surface Transportation Policy and Revenue Study Commission report	Med	Short	Various
	Pursue Federal funding programs used to support freight investments	High	Short	FHWA, other Fed. agencies
	Participate in a state legislative “Freight Day,” to highlight infrastructure investment opportunities and benefits; participate with other organizations such as the Indiana Trucking Association	Med	Short	State legislature; Indiana Trucking Association
	Evaluate incentive and funding programs for freight in other states and consider developing new or modifying existing freight programs in IN	High	Short	State legislature
	Continue to pursue public/private partnerships	High	Ongoing	Private industry
Multimodal/Inter modal	Pursue state legislation to expand INDOT’s oversight, management, and support of alternative modes	Med	Long	State legislature
	Reevaluate recently evaluated projects and corridors with a broader look at multimodal and intermodal opportunities	High	Short	Project sponsors
	Streamline legislative process for acquiring abandoned rail ROW by INDOT for utilities, other uses	Low	Short	State legislature

<sup>a</sup>Short-term – Within one year; Mid-term – one to two years; Long-term – More than two years.

## 9.2 CAPITAL AND OPERATING RECOMMENDATIONS

The full list of recommended capital and operating projects, organized by mode, is shown in Table 9.2. Some projects, particularly those related to non-highway modes over which INDOT currently has limited jurisdiction, may ultimately become more of a “policy” project from INDOT’s perspective, involving support, coordination, outreach, and assistance with funding acquisition.

The I-65 highway corridor is facing increasing congestion throughout its entirety in Indiana through 2030. Capacity expansions along its entire length will be extremely costly; targeted capacity improvements combined with investment in multi-modal alternatives, understanding the specific industries, commodities,

and origin-destination pairs accounting for much of the existing freight volume (see Chapter 6), may be a more cost-effective approach to easing congestion and improving freight mobility along Indiana's north-south axis.

Similarly, Northwest Indiana is continuing to experience high levels of congestion along most of its highways; as a part of the Chicago region and the nation's primary freight and logistics center, improvements for freight mobility are critical. The Borman Expressway, with one of the highest truck volumes in the nation, is already at capacity despite recent expansion; space is not available for any future expansion. Relevant policies and projects related to rail and marine alternatives should begin to be pursued. In the mid- to long-term, improvements along the Ohio River and improved road and rail accessibility to ports along the Ohio River may help to increase use of that underused transportation corridor. Grain, stone, and coal shipments can thereby bypass some of Indiana's most congested rail and highway thoroughfares.

**Table 9.2 Mode-Specific Implementation Plan Summary**

Mode	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
Highway	I-65 – Northwest IN, capacity improvement and/or mode shift (see Rail Recommendations)	High	Mid	Class 1 Railroads; Short line/ regional railroads
	I-65 – Indianapolis to Louisville, capacity improvement and/or mode shift (see Rail Recommendations)	High	Mid	Class 1 Railroads; Short line/ regional railroads
	I-65 – remaining sections, capacity improvement and/or mode shift (see Rail Recommendations)	Med	Long	Class 1 Railroads; Short line/ regional railroads
	U.S. 41 – Northwest IN, capacity improvement	Med	Long	-
	Indiana Toll Road, Northwest IN, capacity improvement	Med	Long	Toll Road
	Indianapolis highway capacity and interchange geometry improvements: I-465, I-65, I-69, I-70, I-74, U.S. 31, U.S. 36	High	Short/Mid/ Long	-
	I-69 – Indianapolis to Evansville, new construction	High	Mid	-
	Illiana Expressway, new construction	High	Long	Illinois DOT
	Borman demand reduction through mode shift (see Rail and Marine Recommendations)	High	Short	Illinois DOT; NIRPC; Port of Indiana; Class 1 Railroads; Short line/ regional railroads

Mode	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
	Consideration of tolled truck lanes in all future highway expansion or improvements, particularly for I-65, I-70, I-80, I-90, and I-94	Med	Ongoing	-
Rail	Capacity improvements to Indiana's primary Class 1 railroads	Med	Mid	Class 1 railroads
	286,000 lb capacity on Indiana's short lines/regional rail; Sufficient capacity and coverage of short lines/regional rail for low-cost, short-haul bulk goods; Continue or increase funding through IRSF or other source	High	Short	Short line/regional railroads State legislature
	Avon Yard highway access: U.S. 36 capacity improvements	Med	Mid	-
	Intermodal container facility in Indiana in conjunction with increased and more direct west coast service	High	Mid	Class 1 railroads; shippers; truckers; economic development agencies
	Increased rail service frequency to Evansville and Remington, particularly for manufacturing industry	Med	Short	Class 1 railroads; shippers; truckers; economic development agencies
	Direct west coast rail service	High	Short	Class 1 railroads; shippers; truckers; economic development agencies
	Develop rail-based "coal corridor" to shift intrastate coal shipments to rail	Med	Long	Coal industry; Class 1 railroads; Short line/regional railroads
	Diversion of freight traffic from Indianapolis Union Station	Low	Long	CIRTA; Amtrak; Class 1 railroads; Indy MPO

Mode	Recommendation	Priority	Phasing <sup>a</sup>	Other Involved Organizations
Air	General improvements to Gary Airport to support more cargo capacity, such as runway expansion	Low	Mid/Long	Gary/Chicago International Airport Authority; NIRPC; CN
	Indianapolis Airport highway access: U.S. 40 capacity improvements	Med	Mid	-
Marine	Update/reconstruct Ohio River locks	Med	Mid/Long	U.S. A.C.E.
	Cline Avenue capacity improvements south of Buffington Harbor and Indiana Harbor	Low	Long	-
	Port of Indiana – Jeffersonville access; I-265 loop	High	Mid	Kentucky DOT; Port of Indiana
	Port of Indiana – Mt. Vernon, other Evansville port access; SR-62 improvements; potential new river crossing	Med	Mid/Long	Kentucky DOT; Port of Indiana
	U.S. 50 @ I-275, Ohio River access	Med	Mid	-
	Work with private industry to consider roll-on/roll-off capability on Lake Michigan	Low	Long	Port of Indiana; Class 1 railroads; Short line/regional railroads; other private industry
	Pursue greater diversity of rail options for ports	Low	Ongoing	Class 1 railroads; Short line/regional railroads
Pipeline	Coordinate with IURC and pipeline operators along new highway or abandoned rail corridors	Low	Ongoing	IURC; pipeline operators

<sup>a</sup>Short-term – Within five years; Mid-term – five to ten years; Long-term – More than ten years.